

(b) If it decides to do so, either affirming or amending its decision. A copy of the board's decision on reconsideration shall be served on all parties, the complainant, and the employing agency.

(7) Upon being served with a decision, the respondent may treat that decision as final for the purpose of petitioning for judicial review. The board may not reconsider any decision after being served with a petition for judicial review.

[Statutory Authority: RCW 42.52.360 (2)(b), 99-06-073, § 292-100-210, filed 3/2/99, effective 4/2/99.]

Title 296 WAC

LABOR AND INDUSTRIES, DEPARTMENT OF

Chapters

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296-400A	Certification of competency for journeyman plumbers.
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Chapter 296-14 WAC INDUSTRIAL INSURANCE

WAC

296-14-100	Definition of voluntary retirement.
296-14-410	Reduction, suspension, or denial of compensation as a result of noncooperation.

WAC 296-14-100 Definition of voluntary retirement.

(1) **What is voluntarily retired?** The worker is considered voluntarily retired if both of the following conditions are met:

- (a) The worker is not receiving income, salary or wages from any gainful employment; and
- (b) The worker has provided no evidence to show a bonafide attempt to return to work after retirement.

Time-loss compensation is not paid to workers who voluntarily retired from the work force.

(c) Payment of union dues or medical or life insurance premiums does not constitute attachment to the work force.

(2) **When is a worker determined not to be voluntarily retired?** A worker is not voluntarily retired when the industrial injury or occupational disease is a proximate cause for the retirement.

[Statutory Authority: RCW 51.04.020, 99-18-062, § 296-14-100, filed 8/30/99, effective 9/30/99. Statutory Authority: RCW 51.32.060, 51.32.090, 51.32.160, 51.21.220(6) [51.32.220(6)] and 51.32.240 (1), (2) or (3), 86-18-036 (Order 86-33), § 296-14-100, filed 8/28/86.]

WAC 296-14-410 Reduction, suspension, or denial of compensation as a result of noncooperation. (1) **Can the department or self-insurer reduce, suspend or deny industrial insurance benefits from a worker?** The department or the self insurer, after receiving the department's order, has the authority to reduce, suspend or deny benefits when a worker (or worker's representative) is noncooperative with the management of the claim.

(2) **What does noncooperative mean?** Noncooperation is behavior by the worker (or worker's representative) which obstructs and/or delays the department or self-insurer from reaching a timely resolution of the claim.

(a) Noncooperation can include any one of the following:

(i) Not attending or cooperating with medical examinations or vocational evaluations requested by the department or self-insurer.

(ii) Failure to keep scheduled appointments or evaluations with attending physician or vocational counselor.

(iii) Engaging in unsanitary or harmful actions that jeopardize or slow recovery.

(iv) Not accepting medical and/or surgical treatment that is considered reasonably essential for recovery from the industrial injury or occupational disease.

(3) Are there ever exceptions to attending a scheduled examination or vocational evaluation? The worker will not be considered uncooperative if refusal to attend a scheduled examination is for any one of the following reasons:

(a) The department or self-insurer did not mail notice to the worker and designated representative at least fourteen but no more than sixty days prior to the examination. The notice must contain the date, time and location of the examination.

(b) If the worker is thirty or less minutes late for the appointment.

(c) If the worker has not been examined or evaluated and leaves after waiting for more than one hour after the scheduled time.

(4) What actions are taken before reducing, suspending or denying industrial insurance benefits?

(a) The department or self insurer must first send a letter to the worker (or the worker's representative) advising that benefits may be suspended and asking for an explanation for the noncooperation, obstruction and/or delay of the management of the claim.

(b) The worker has thirty days to respond in writing to the letter. This written response should include the reason(s) the worker has for not cooperating with the department or self insurer.

(5) What are the actions the department can take if a worker (or a worker's representative) is determined to be noncooperative? If the worker does not respond in thirty days to the letter asking for justification for not cooperating or it is determined there is no good cause the department or self insurer, after receiving the department's order, may take the following action:

(a) Reduce current or future time-loss compensation by the amount of the charge incurred by the department or self-insurer for any examination, evaluation, or treatment that the worker failed to attend.

(b) Reduce, suspend or deny all or part of the time-loss benefits.

(c) Suspend or deny medical benefits.

[Statutory Authority: RCW 51.04.020, 99-18-062, § 296-14-410, filed 8/30/99, effective 9/30/99. Statutory Authority: RCW 51.32.110 and 51.32.190(6), 90-19-028, § 296-14-410, filed 9/12/90, effective 10/13/90.]

Chapter 296-15 WAC

WORKERS' COMPENSATION SELF-INSURANCE RULES AND REGULATIONS

WAC

296-15-010 Repealed.

[2000 WAC Supp—page 798]

296-15-020	Repealed.
296-15-021	Individual firm self insurance application.
296-15-022	Repealed.
296-15-023	Repealed.
296-15-025	Repealed.
296-15-026	Repealed.
296-15-02601	Repealed.
296-15-02602	Repealed.
296-15-02603	Repealed.
296-15-02604	Repealed.
296-15-02605	Repealed.
296-15-030	Repealed.
296-15-031	Employee stock ownership plan self insurance application.
296-15-041	Joint venture self insurance application.
296-15-045	Repealed.
296-15-050	Repealed.
296-15-051	Public entity self insurance application.
296-15-060	Repealed.
296-15-061	Employer group self insurance application.
296-15-065	Repealed.
296-15-080	Repealed.
296-15-090	Repealed.
296-15-110	Repealed.
296-15-121	Surety for a self insurance program.
296-15-130	Repealed.
296-15-135	Repealed.
296-15-145	Repealed.
296-15-150	Repealed.
296-15-151	Surety for a public entity's self insurance program.
296-15-161	Surety for a group self insurance program.
296-15-170	Repealed.
296-15-171	Surety for a self insured pension or fatality claim.
296-15-181	Funding the benefits of an insolvent self insurer.
296-15-210	Repealed.
296-15-215	Repealed.
296-15-220	Repealed.
296-15-221	Self insurers' reporting requirements.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-15-010	Preamble and authority. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-010, filed 7/1/86; Order 71-15, § 296-15-010, filed 12/1/71.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
296-15-020	Certification to self-insure. [Statutory Authority: RCW 51.04.020, 94-05-042, § 296-15-020, filed 2/9/94, effective 3/14/94; 90-14-036, § 296-15-020, filed 6/29/90, effective 7/30/90; 88-12-096 (Order 88-07), § 296-15-020, filed 6/1/88; 86-14-079 (Order 86-25), § 296-15-020, filed 7/1/86. Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-020, filed 12/1/83, effective 1/1/84; Order 77-19, § 296-15-020, filed 9/26/77; Order 71-15, § 296-15-020, filed 12/1/71.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
296-15-022	Corporate guarantee. [Statutory Authority: RCW 51.04.020, 93-11-064, § 296-15-022, filed 5/14/93, effective 6/14/93; 88-12-096 (Order 88-07), § 296-15-022, filed 6/1/88. Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-022, filed 12/1/83, effective 1/1/84.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
296-15-023	Entities included in certification. [Statutory Authority: RCW 51.04.020, 93-11-064, § 296-15-023, filed 5/14/93, effective 6/14/93; 88-12-096 (Order 88-07), § 296-15-023, filed 6/1/88; 86-14-079 (Order 86-25), § 296-15-023, filed 7/1/86. Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-023, filed 12/1/83, effective 1/1/84.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
296-15-025	Joint venture. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-025, filed 7/1/86; 82-07-019 (Order 82-8), § 296-15-025, filed 3/10/82.]

- Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-026 Group self-insurance application. [Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-026, filed 12/1/83, effective 1/1/84. Statutory Authority: RCW 51.14.150 and 51.14.160. 83-01-076 (Order 82-43), § 296-15-026, filed 12/17/82.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-02601 Group self-insurers admission of new members, termination of individual members. [Statutory Authority: RCW 51.04.020, 94-17-069, § 296-15-02601, filed 8/15/94, effective 9/15/94. Statutory Authority: RCW 51.04.020(1), 84-06-031 (Order 83-38), § 296-15-02601, filed 3/1/84, effective 4/1/84; 83-24-027 (Order 83-22), § 296-15-02601, filed 12/1/83, effective 1/1/84. Statutory Authority: RCW 51.14.150 and 51.14.160. 83-01-076 (Order 82-43), § 296-15-02601, filed 12/17/82.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-02602 Group self-insurance reports. [Statutory Authority: RCW 51.14.150 and 51.14.160. 83-01-076 (Order 82-43), § 296-15-02602, filed 12/17/82.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-02603 Group self-insurance trustee responsibilities. [Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-02603, filed 12/1/83, effective 1/1/84. Statutory Authority: RCW 51.14.150 and 51.14.160. 83-01-076 (Order 82-43), § 296-15-02603, filed 12/17/82.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-02604 Group self-insurance funds—Surplus distribution—Deficit. [Statutory Authority: RCW 51.14.150 and 51.14.160. 83-01-076 (Order 82-43), § 296-15-02604, filed 12/17/82.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-02605 Reserves. [Statutory Authority: RCW 51.14.150 and 51.14.160. 83-01-076 (Order 82-43), § 296-15-02605, filed 12/17/82.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-030 Surety requirement. [Statutory Authority: RCW 51.04.020, 94-05-042, § 296-15-030, filed 2/9/94, effective 3/14/94; 93-11-064, § 296-15-030, filed 5/14/93, effective 6/14/93; 90-24-039, § 296-15-030, filed 11/30/90, effective 12/31/90; 88-12-096 (Order 88-07), § 296-15-030, filed 6/1/88; 87-05-008 (Order 87-02), § 296-15-030, filed 2/9/87; 86-14-079 (Order 86-25), § 296-15-030, filed 7/1/86; 85-06-031 (Order 85-6), § 296-15-030, filed 3/1/85; Order 77-19, § 296-15-030, filed 9/26/77; Order 72-4, § 296-15-030, filed 4/25/72; Order 71-15, § 296-15-030, filed 12/1/71.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-045 Payment of deficit. [Statutory Authority: RCW 51.14.020(1), 83-07-075 (Order 83-9), § 296-15-045, filed 3/23/83.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-050 Reinsurance. [Statutory Authority: RCW 51.04.020, 85-06-031 (Order 85-6), § 296-15-050, filed 3/1/85; Order 77-19, § 296-15-050, filed 9/26/77; Order 71-15, § 296-15-050, filed 12/1/71.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-060 Administrative cost assessment. [Statutory Authority: RCW 51.04.020, 94-17-069, § 296-15-060, filed 8/15/94, effective 9/15/94; 93-11-064, § 296-15-060, filed 5/14/93, effective 6/14/93; 86-14-079 (Order 86-25), § 296-15-060, filed 7/1/86; Order 77-19, § 296-15-060, filed 9/26/77; Order 75-28, § 296-15-060, filed 8/29/75, effective 1/1/76; Order 74-38, § 296-15-060, filed 11/18/74, effective 1/1/75; Order 73-24, § 296-15-060, filed 11/23/73; Order 71-15, § 296-15-060, filed 12/1/71.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-065 Self-insurers' insolvency trust. [Statutory Authority: RCW 51.04.020, 93-11-064, § 296-15-065, filed 5/14/93, effective 6/14/93; 88-12-096 (Order 88-07), § 296-15-065, filed 6/1/88; 86-24-014 (Order 86-40), § 296-15-065, filed 11/24/86.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-080 Statement of financial condition. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-080, filed 7/1/86. Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-080, filed 12/1/83, effective 1/1/84; Order 77-19, § 296-15-080, filed 9/26/77; Order 74-38, § 296-15-080, filed 11/18/74, effective 1/1/75; Order 74-29, § 296-15-080, filed 5/29/74, effective 7/1/74.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-090 Application of supplemental moneys in payment of compensation. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-090, filed 7/1/86; Order 77-19, § 296-15-090, filed 9/26/77; Order 74-38, § 296-15-090, filed 11/18/74, effective 1/1/75.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-110 Contract with a service organization. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-110, filed 7/1/86; Order 74-38, § 296-15-110, filed 11/18/74, effective 1/1/75.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-130 Administration of self-insurance. [Order 74-38, § 296-15-130, filed 11/18/74, effective 1/1/75.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-135 Contact person. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-135, filed 7/1/86.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-145 Expense of withdrawn certificate audit. [Order 74-38, § 296-15-145, filed 11/18/74, effective 1/1/75.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-150 Accident prevention program. [Statutory Authority: RCW 51.04.020, 86-14-079 (Order 86-25), § 296-15-150, filed 7/1/86; Order 74-38, § 296-15-150, filed 11/18/74, effective 1/1/75.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-170 Cessation of business—Change of status. [Statutory Authority: RCW 51.04.020, 94-05-042, § 296-15-170, filed 2/9/94, effective 3/14/94; 88-12-096 (Order 88-07), § 296-15-170, filed 6/1/88; Order 75-28, § 296-15-170, filed 8/29/75, effective 1/1/76.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-210 Supplementation of temporary total disability compensation by self-insured employers. [Order 77-19, § 296-

- 15-210, filed 9/26/77; Order 75-36, § 296-15-210, filed 10/28/75.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-215 Cash, bond or assignment of account alternative for death or permanent total disability. [Statutory Authority: RCW 51.04.020, 88-12-096 (Order 88-07), § 296-15-215, filed 6/1/88; 85-06-031 (Order 85-6), § 296-15-215, filed 3/1/85. Statutory Authority: RCW 51.04.020(1), 83-24-027 (Order 83-22), § 296-15-215, filed 12/1/83, effective 1/1/84. Statutory Authority: RCW 51.04.020 and Title 51 RCW, 81-23-047 (Order 81-27), § 296-15-215, filed 11/18/81.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.
- 296-15-220 Second injury fund. [Order 77-19, § 296-15-220, filed 9/26/77.] Repealed by 99-23-107, filed 11/17/99, effective 12/27/99. Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150.

WAC 296-15-010 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-020 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-021 Individual firm self insurance application. (1) **What does individual firm mean when applying for certification to self insure workers' compensation benefits?** When applying for certification to self insure workers' compensation benefits, an individual firm means a sole proprietor, partnership or corporation which is responsible for its own audited financial statements.

(2) **What minimum requirements must an individual firm meet to apply for self insurance certification?** The department will consider an individual firm's application for self insurance certification if it:

- (a) Meets the department's net worth requirement;
- (b) Has been in business for three years; and
- (c) Has acceptable accident prevention programs in place for at least six months in Washington locations.

(3) **How does an individual firm apply?** The individual firm must submit Self Insurance Application SIF-1 L&I form F207-001-000 and three years of financial statements with the most recent year's financial statement audited by a certified independent public accountant.

(4) **What happens after an individual firm submits its application to the department?** After the department receives an application from an individual firm, the department will:

- (a) Conduct an evaluation of the written accident prevention program in effect at a sample of the applicant's locations;
- (b) Consider all matters related to the application; and
- (c) Notify the individual firm whether certification is approved or denied thirty days before the requested certification date unless more time is needed.

(5) **What if the application is denied?** The application will be denied if the individual firm does not meet the department's financial and/or accident prevention program requirements. If the application is denied for:

(a) Financial reasons, the individual firm may reapply after its next independently audited financial statement is available. The department may require the applicant to provide additional information.

(b) Accident prevention program deficiencies, the individual firm may be required to wait six months before reapplying.

(c) Both financial reasons and accident prevention program deficiencies, the individual firm may reapply after its next independently audited financial statement is available. The department may also require the applicant to wait six months before reapplying.

(6) What if the application is approved?

(a) If the application is approved, the individual firm must do all of the following before certification will be granted:

(i) Provide written acknowledgment L&I form F207-144-000 of its responsibility to pay benefits on all claims incurred during its period of self insurance. This obligation will continue even if the individual firm voluntarily or involuntarily surrenders its self insurance certification.

(ii) Provide surety in the amount determined necessary by the department. Surety must be filed with the department on a form provided by the department. Initial surety will be the greatest of:

(A) The minimum surety. This amount is calculated annually by department actuaries and is equal to the projected average current cost of a permanent total disability claim, including time loss, pension reserve and other claim costs paid prior to pension.

(B) The estimated annual amount of accident fund and medical aid fund premiums the self insurer would have paid if still in the state fund.

(C) The estimated amount of developed incurred benefits based on the self insurer's past experience with state fund adjusted for changes in the benefit schedules and exposure.

(D) The estimated average annual incurred losses made by an independent qualified actuary and accepted by the department.

Surety will never be established at a level lower than the minimum surety amount. The department may increase the initial surety amount if other conditions are expected to alter the potential claim costs and/or the self insurer's ability to pay them. A decrease will not be considered during the first three years of certification.

(iii) Pay its share of any state fund deficit or insufficiency. See the Employer's Guide to Self Insurance L&I form F207-079-000 for how the deficit share is calculated.

(iv) Obtain the services of an individual or service organization with an individual qualified to administer a Washington workers' compensation program.

(A) A qualified claim administrator has satisfactorily demonstrated to the department:

(I) A thorough knowledge in Title 51 RCW and all workers' compensation rules; and

(II) An expertise in claim adjudication.

(B) The claim administrator must also have the authority to make prompt:

(I) Payment of all compensation and assessments when due; and

(II) Decisions regarding claim adjudication and awards.

(C) If a service organization will be used, submit a copy of the service contract.

(I) The contract copy may delete clause(s) relating to payment of services.

(II) However, if payment for services is based on the number of claims filed by the self insurer's workers, this must be explained in detail. The department may require an unaltered copy of the agreement for clarification.

(b) The self insured individual firm will be held accountable for:

(i) Its entire workers' compensation program, including all actions on its claims, regardless of whether it contracts with a service organization or administers its own program; and

(ii) Complying with and keeping informed of all changes to industrial insurance laws and rules.

(c) Certification of an individual self insurer will include all of its subsidiaries (fifty percent owned and/or financial interest controlled by) or divisions doing business in Washington. One certificate will be issued to an approved self insurer. The subsidiaries or divisions will be considered one self insurer for all industrial insurance purposes.

(d) The effective date of certification will be the first day of the quarter after the department receives the surety and required documentation. If the applicant fails to provide the required information before the approved certification date and later wishes to follow through, the department will require the individual firm to reapply.

(7) What if an individual firm is a subsidiary of a corporation?

(a) If an individual self insured firm has a parent (owner of fifty percent and/or having controlling financial interest), the parent must provide the department with its written guarantee L&I form F207-040-000 to assume responsibility for all workers' compensation liabilities of the subsidiary if the subsidiary defaults on its liabilities.

(b) If a parent fails to provide a guarantee, the department will require the subsidiary to provide surety at one hundred twenty-five percent of its actual requirement. The subsidiary must continue to provide surety at the higher level as long as it has no parental guarantee.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-021, filed 11/17/99, effective 12/27/99.]

WAC 296-15-022 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-023 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-025 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-026 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-02601 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-02602 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-02603 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-02604 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-02605 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-030 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-031 Employee stock ownership plan self insurance application. (1) **What does employee stock ownership plan (ESOP) mean when applying for certification to self insure workers' compensation benefits?** When applying for certification to self insure workers' compensation benefits, an employee stock ownership plan (ESOP) means the employees of a self insured firm have purchased majority controlling financial interest in the firm. The new ESOP will be required to return to the state fund for workers' compensation coverage, and after one year in the state fund, the ESOP may apply to become self insured.

(2) **What minimum requirements must an ESOP meet to apply for self insurance certification?** The department will consider an ESOP's application for self insurance certification if it:

(a) Meets the department's net worth requirement;

(b) Has been in business for one year; and

(c) Has acceptable accident prevention programs in place for at least six months in Washington locations.

(3) **How does an ESOP apply?** The ESOP must submit Self Insurance Application SIF-1 L&I form F207-001-000 with the most recent year's financial statement audited by a certified independent public accountant.

(4) **What happens after an ESOP submits its application to the department?** After the department receives an application from an ESOP, the department will:

(a) Conduct an evaluation of the written accident prevention program in effect at a sample of the applicant's locations;

(b) Consider all matters related to the application; and

(c) Notify the ESOP whether certification is approved or denied thirty days before the requested certification date unless more time is needed.

(5) **What if the application is denied?** The application will be denied if the ESOP does not meet the department's financial and/or accident prevention program requirements. If the application is denied for:

(a) Financial reasons, the ESOP may reapply after its next independently audited financial statement is available. The department may require the applicant to provide additional information.

(b) Accident prevention program deficiencies, the ESOP may be required to wait six months before reapplying.

(c) Both financial reasons and accident prevention program deficiencies, the ESOP may reapply after its next independently audited financial statement is available. The department may also require the applicant to wait six months before reapplying.

(6) What if the application is approved?

(a) If the application is approved, the ESOP must do all of the following before certification will be granted:

(i) Provide written acknowledgment on L&I form F207-144-000 of its responsibility to pay benefits on all claims incurred during its period of self insurance. This obligation will continue even if the ESOP voluntarily or involuntarily surrenders its self insurance certification.

(ii) Provide surety in the amount determined necessary by the department. Surety must be filed with the department on a form provided by the department. For the first three years of certification, an ESOP must provide surety equal to one hundred twenty-five percent of its actual requirement. Initial surety will be the greatest of:

(A) The minimum surety. This amount is calculated annually by department actuaries and is equal to the projected average current cost of a permanent total disability claim, including time loss, pension reserve and other claim costs paid prior to pension.

(B) The estimated annual amount of accident fund and medical aid fund premiums the self insurer would have paid if still in the state fund.

(C) The estimated amount of developed incurred benefits based on the self insurer's past experience with state fund adjusted for changes in the benefit schedules and exposure.

(D) The estimated average annual incurred losses made by an independent certified public accountant and accepted by the department.

Surety will never be established at a level lower than the minimum surety amount. The department may increase the initial surety amount if other conditions are expected to alter the potential claim costs and/or the self insurer's ability to pay them. A decrease will not be considered during the first three years of certification.

(iii) Pay its share of any state fund deficit or insufficiency. See the Employer's Guide to Self Insurance L&I form F207-079-000 for how the deficit share is calculated.

(iv) Obtain the services of an individual or service organization with an individual qualified to administer a Washington workers' compensation program.

(A) A qualified claim administrator has satisfactorily demonstrated to the department:

(I) A thorough knowledge in Title 51 RCW and all workers' compensation rules; and

(II) An expertise in claim adjudication.

(B) The claim administrator must also have the authority to make prompt:

(I) Payment of all compensation and assessments when due; and

(II) Decisions regarding claim adjudication and awards.

(C) If a service organization will be used, submit a copy of the service contract.

(I) The contract copy may delete clause(s) relating to payment of services.

(II) However, if payment for services is based on the number of claims filed by the self insurer's workers, this must be explained in detail. The department may require an unaltered copy of the agreement for clarification.

(b) The self insured ESOP will be held accountable for:

(i) Its entire workers' compensation program, including all actions on its claims, regardless of whether it contracts with a service organization or administers its own program; and

(ii) Complying with and keeping informed of all changes to industrial insurance laws and rules.

(c) Certification of an ESOP will include all of its subsidiaries (fifty percent owned and/or financial interest controlled by) or divisions doing business in Washington. One certificate will be issued to an approved self insurer, and the subsidiaries or divisions will be considered one self insurer for all industrial insurance purposes.

(d) The effective date of certification will be the first day of the quarter after the department receives the surety and required documentation. If the applicant fails to provide the required information before the approved certification date and later wishes to follow through, the department will require the ESOP to reapply.

(7) What if an ESOP firm is a subsidiary of a corporation?

(a) If an ESOP has a parent (owner of fifty percent and/or having controlling financial interest), the parent must provide the department with its written guarantee L&I form F207-040-000 to assume responsibility for all workers' compensation liabilities of the subsidiary if the subsidiary defaults on its liabilities.

(b) If a parent fails to provide a guarantee, the department will require the subsidiary to provide surety at one hundred twenty-five percent of its actual requirement. The subsidiary must continue to provide surety at the higher level as long as it has no parental guarantee.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-031, filed 11/17/99, effective 12/27/99.]

WAC 296-15-041 Joint venture self insurance application. (1) What does joint venture mean when applying for certification to self insure workers' compensation benefits? When applying for certification to self insure workers' compensation benefits, a joint venture means two or more firms which have signed a contractual agreement to operate as a single unit for a specified period of time.

(2) What minimum requirements must a joint venture meet to apply for self insurance certification? The department will consider a joint venture's application for self insurance certification if the joint venture is sponsored by a current self insurer, and the sponsor has majority financial interest in the joint venture's assets and profits.

(3) How does a joint venture apply? The joint venture must submit Self Insurance Application SIF-1 L&I form F207-001-000 and:

(a) Three years of financial statements of all parties having at least twenty percent financial interest in the joint venture, with each party's most recent year's financial statement audited by a certified independent public accountant;

(b) A copy of the joint venture agreement describing the obligations of each party for the joint venture's industrial insurance program; and

(c) Each party's written acknowledgment of its joint and several liability for continuing compensation if any party defaults. This responsibility continues until the department provides a written release from this responsibility to the joint venture or remaining party to the joint venture.

(4) What happens after a joint venture submits its application to the department? After the department receives an application from a joint venture:

(a) The sponsoring self insurer has the responsibility to ensure the adequacy of the written accident prevention program in effect at the joint venture's locations;

(b) The department will consider all matters related to the application; and

(c) The department will notify the joint venture whether certification is approved or denied thirty days before the requested certification date unless more time is needed.

(5) What if the application is denied? The application will be denied if the joint venture does not meet the department's financial requirements. If the application is denied, the joint venture may reapply after the next independently audited financial statements of the original applicants are available. The department may require the joint venture to provide additional information.

(6) What if the application is approved?

(a) If the application is approved, the joint venture must do all of the following before certification will be granted:

(i) Provide surety in the amount determined necessary by the department. Surety must be filed with the department on a form provided by the department. Surety must name the joint venture and all parties as principal. Initial surety will be the greatest of:

(A) The minimum surety. This amount is calculated annually by department actuaries and is equal to the projected average current cost of a permanent total disability claim, including time loss, pension reserve and other claim costs paid prior to pension.

(B) The estimated annual amount of accident fund and medical aid fund premiums the self insurer would have paid if still in the state fund.

Surety will never be established at a level lower than the minimum surety amount.

(ii) Pay its share of any state fund deficit or insufficiency. See the Employer's Guide to Self Insurance L&I form F207-079-000 for how the deficit share is calculated.

(iii) Obtain the services of an individual or service organization with an individual qualified to administer a Washington workers' compensation program.

(A) A qualified claim administrator has satisfactorily demonstrated to the department:

(I) A thorough knowledge in Title 51 RCW and all workers' compensation rules; and

(II) An expertise in claim adjudication.

(B) The claim administrator must also have the authority to make prompt:

(I) Payment of all compensation and assessments when due; and

(II) Decisions regarding claim adjudication and awards.

(C) If a service organization will be used, submit a copy of the service contract.

(I) The contract copy may delete clause(s) relating to payment of services.

(II) However, if payment for services is based on the number of claims filed by the self insurer's workers, this must be explained in detail. The department may require an unaltered copy of the agreement for clarification.

(b) The self insured joint venture will be held accountable for:

(i) Its entire workers' compensation program, including all actions on its claims, regardless of whether it contracts with a service organization or administers its own program; and

(ii) Complying with and keeping informed of all changes to industrial insurance laws and rules.

(c) The effective date of certification will be the first day of the month after the department receives the surety and required documentation. If the applicant fails to provide the required information before the approved certification date and later wishes to follow through, the department will require the joint venture to reapply.

(7) What responsibility does the self insured sponsor have for the joint venture? The sponsor must provide written acknowledgment of its responsibility for the management of all claims and payment of all compensation incurred during the period of the joint venture's self insurance and after the joint venture has been dissolved. The acknowledgment must include the sponsor's responsibility for the continuation of benefits if any party to the joint venture or the joint venture defaults.

(8) When can a minority partner be released from its joint venture obligations? If the sponsor submits a written request, the department may release a minority party from its obligations under the joint venture after:

(a) The contract has been fulfilled; and

(b) A final settlement of the joint venture account has been made.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-041, filed 11/17/99, effective 12/27/99.]

WAC 296-15-045 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-050 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-051 Public entity self insurance application. (1) **What does public entity mean when applying for certification to self insure workers' compensation benefits?** When applying for certification to self insure workers' compensation benefits, public entity means an individual

city, county, school district, port, public hospital district, public utility district, or other public corporation.

(2) **What minimum requirements must a public entity meet to apply for self insurance certification?** The department will consider a public entity's application for self insurance certification if it:

- (a) Meets the department's net worth requirement;
- (b) Has been in business for three years; and
- (c) Has acceptable accident prevention programs in place for at least six months in Washington locations.

(3) **How does a public entity apply?** A public entity must submit Self Insurance Application SIF-1 L&I form F207-001-000 and three years of financial statements with the most recent year's financial statement audited by a certified independent public accountant or state auditor.

(4) **What happens after a public entity submits its application to the department?** After the department receives an application from a public entity, the department will:

- (a) Conduct an evaluation of the written accident prevention program in effect at a sample of the applicant's locations;
- (b) Consider all matters related to the application; and
- (c) Notify the public entity whether certification is approved or denied thirty days before the requested certification date unless more time is needed.

(5) **What if the application is denied?** The application will be denied if the public entity does not meet the department's financial and/or accident prevention program requirements. If the application is denied for:

(a) Financial reasons, the public entity may reapply after its next independently audited financial statement is available. The department may require the applicant to provide additional information.

(b) Accident prevention program deficiencies, the public entity may be required to wait six months before reapplying.

(c) Both financial reasons and accident prevention program deficiencies, the public entity may reapply after its next independently audited financial statement is available. The applicant may also be required to wait six months before reapplying.

(6) **What if the application is approved?**

(a) If the application is approved, the public entity must do all of the following before certification will be granted:

(i) Provide written acknowledgment L&I form F207-144-000 of its responsibility to pay benefits on all claims incurred during its period of self insurance. This obligation will continue even if the public entity voluntarily or involuntarily surrenders its self insurance certification.

(ii) Provide surety in the amount determined necessary by the department.

(A) A public entity's surety must provide for sufficient revenues to satisfy the total estimated claim costs for the upcoming fiscal period. Surety must be filed with the department on a form provided by the department. The minimum surety level will be established by the department.

(B) Each public entity must also establish a cumulative reserve of at least twenty-five percent of its surety requirement. Use a surety type accepted by the department.

The department may increase the initial surety amount if other conditions are expected to alter the potential claim costs and/or the self insurer's ability to pay them. A decrease will not be considered during the first three years of certification.

(iii) Pay its share of any state fund deficit or insufficiency. See the Employer's Guide to Self Insurance L&I form F207-079-000 for how the deficit share is calculated.

(iv) Obtain the services of an individual or service organization with an individual qualified to administer a Washington workers' compensation program.

(A) A qualified claim administrator has satisfactorily demonstrated to the department:

(I) A thorough knowledge in Title 51 RCW and all workers' compensation rules; and

(II) An expertise in claim adjudication.

(B) The claim administrator must also have the authority to make prompt:

(I) Payment of all compensation and assessments when due; and

(II) Decisions regarding claim adjudication and awards.

(C) If a service organization will be used, submit a copy of the service contract.

(I) The contract copy may delete clause(s) relating to payment of services.

(II) However, if payment for services is based on the number of claims filed by the self insurer's workers, this must be explained in detail. The department may require an unaltered copy of the agreement for clarification.

(b) The self insured public entity will be held accountable for:

(i) Its entire workers' compensation program, including all actions on its claims, regardless of whether it contracts with a service organization or administers its own program; and

(ii) Complying with and keeping informed of all changes to industrial insurance laws and rules.

(c) Certification of a public entity will include all of its business operations in Washington. One certificate will be issued to an approved self insurer, and the public entity's business operations will be considered one self insurer for all industrial insurance purposes.

(d) The effective date of certification will be the first day of the quarter after the department receives the surety and required documentation. If the applicant fails to provide the required information before the approved certification date and later wishes to follow through, the department will require the public entity to reapply.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-051, filed 11/17/99, effective 12/27/99.]

WAC 296-15-060 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-061 Employer group self insurance application. (1) **What does an employer group mean when applying for certification to self insure workers' compensation benefits?** When applying for certification to self insure its workers' compensation benefits, an employer group

means a group of employers qualified to self insure under Title 51 RCW.

(2) **What minimum requirements must a group meet to apply for self insurance certification?** The department will consider a group's application for self insurance certification if the qualified group of employers has acceptable accident prevention programs in place for at least six months in Washington locations.

(3) **How does an employer group apply?** The initial board of trustees of the proposed group must submit a complete and accurate application, including:

- (a) A copy of the group's bylaws.
- (b) Individual applications and current audited financial statement of each member.
- (c) A financial statement collectively showing the financial condition of members.
- (d) Evidence of the fiscal agent's/administrator's fidelity bond with the trust fund. The bond must be sufficient to protect the trust fund against misappropriation or misuse of any money or securities. The bond is a condition for a group to become certified and for the continued operation of the trust fund.
- (e) A listing of the estimated standard premium to be developed for each member individually and the estimated standard premium of the group as a whole.
- (f) An indemnity agreement jointly and severally binding the group and each member to comply with the provisions of Title 51 RCW.
- (g) A detailed budget of all projected administrative expenses for the first year of operation.

(4) **What happens after the application is submitted to the department?** After the application is submitted, the department will:

- (a) Conduct an evaluation of the proposed group members' written accident prevention programs in effect at a sample of the applicant's locations;
- (b) Consider all matters related to the application; and
- (c) Notify the group whether certification is approved or denied thirty days before the requested certification date unless more time is needed.

(5) **What if the application is denied?** The application will be denied if the group does not meet the department's financial and/or accident prevention program requirements. If the application is denied for:

- (a) Financial reasons, the group may reapply after the next independently audited financial statements of the original applicants are available. The department may require additional information.
- (b) Because of deficiencies in its accident prevention program, the applicant may be required to wait six months before reapplying.
- (c) Both financial reasons and accident prevention program deficiencies, the group may reapply after the next independently audited financial statements of the original applicants are available. The department may also require the applicant to wait six months before reapplying.

(6) **What if the application is approved?**

(a) If the application is approved, the group must do all of the following before certification will be granted:

(i) Provide to the department:

(A) Written acknowledgment L&I form F207-144-000 of the group's responsibility for the payment of benefits on all claims incurred during its period of self insurance. This obligation will continue even if the group voluntarily or involuntarily surrenders its self insurance certification.

(B) Evidence of the administrator or fiscal agent's fidelity bond.

(C) Surety in the amount determined necessary by the department. Surety must be filed with the department on a form provided by the department. The group self insurer must maintain adequate financial reserves to cover the group's claims liabilities and administrative expenses, including the administrative assessment which would apply to claim costs if the group discontinued.

(I) For the first year of operation, adequate means the group self insurer has collected revenues from members which total one hundred twenty-five percent of the premiums which would have been paid into the state fund, and the group has submitted documentation of the collected revenues to the department.

(II) For subsequent years of operation, adequate means the group self insurer has collected revenues from its members which equal one hundred percent of the premiums which would have been paid into the state fund for each year of operation, and the group has submitted documentation of the collected revenues to the department.

(D) Evidence of:

(I) Excess workers' compensation coverage and reserves covering the difference between the aggregate retention level and claim expenditures; or

(II) Maintaining a contingency reserve to cover any adverse development of claim liability. The contingency reserve must equal the greater of fifteen percent of the claims liability or twenty-five percent of the premium amount.

The department may increase the initial surety amount if other conditions are expected to alter the potential claim costs and/or the group's ability to pay them. A decrease will not be considered during the first five years of certification.

(ii) Pay its share of any state fund deficit or insufficiency. See the Employer's Guide to Self Insurance L&I form F207-079-000 for how the deficit share is calculated.

(iii) Obtain the services of an individual or service organization with an individual qualified to administer a Washington workers' compensation program.

(A) A qualified claim administrator has satisfactorily demonstrated to the department:

(I) A thorough knowledge in Title 51 RCW and all workers' compensation rules; and

(II) An expertise in claim adjudication.

(B) The claim administrator must also have the authority to make prompt:

(I) Payment of all compensation and assessments when due; and

(II) Decisions regarding claim adjudication and awards.

(C) If a service organization will be used, submit a copy of the service contract.

(I) The contract copy may delete clause(s) relating to payment of services.

(II) However, if payment for services is based on the number of claims filed by the self insurer's workers, this must be explained in detail. The department may require an unaltered copy of the agreement for clarification.

(b) The group self insurer will be held accountable for:

(i) Its entire workers' compensation program, including all actions on its claims, regardless of whether it contracts with a service organization or administers its own program; and

(ii) Complying with and keeping informed of all changes to industrial insurance laws and rules.

(c) Certification will be effective the first day of the quarter after the department receives the surety and required documentation. If the applicant fails to provide the required information before the approved certification date and later wishes to follow through, the department will require the group to reapply.

(d) Certification of a group will include all of its members doing business in Washington. One certificate will be issued to an approved self insurer. All members of a group will be considered as one self insurer for the purposes of Title 51 RCW.

(7) After becoming self insured, how will a group admit or terminate individual members?

(a) A prospective member must submit its application to the group's board of trustees or its administrator. Approved applications must be filed with the department. Membership will take effect the first day of the calendar quarter after the department receives the application.

(b) A group may terminate individual members according to its bylaws, or members may choose to terminate membership. Termination will be effective at the end of the month after the department receives notification.

(8) Who is on a group self insurer's board of trustees? Members of the group elect the board of trustees. Trustees serve stated terms of office and direct the administration of the trust fund.

(9) What are the responsibilities of a group self insurer's board of trustees?

(a) A group self insurer's board of trustees is responsible for all operations of the group's trust fund and is expected to ensure the fund's financial stability. The board's duties include:

(i) Approving new members' applications.

(ii) Designating a fiscal agent and/or administrator to administer the financial affairs of the trust fund in accordance with Title 51 RCW and workers' compensation rules, including those regarding investments of funds, budget and accounting procedures.

(iii) Setting the schedule of due dates and premium amounts.

(iv) Managing deposits to and disbursements from the trust fund.

(v) Auditing the accounts and records of the trust fund annually and whenever required by the department. Copies of audits are due in the department within six months after the close of the fund year.

(vi) Maintaining and providing at department request:

(A) Summary loss data; and

(B) Certified copies of the minutes of trustee meetings.

(b) If specifically defined in board meeting minutes, the board may delegate authority for:

(i) Contracting with a service organization.

(ii) According to department requirements regarding investing surplus moneys, determining premiums and refunds.

(iii) Approving applications for membership.

(10) What are a group self insurer's trustees, fiscal agents or administrators specifically prohibited from?

(a) A group self insurer's trustee, fiscal agent or administrator CANNOT BE either:

(i) An owner or employee of a company under contract to the trust fund; or

(ii) An officer or employee of a service organization contracted to handle any business function of the group.

(b) A group self insurer's trustee, fiscal agent or administrator CANNOT DO any of the following:

(i) Extend credit to members for premium payment.

(ii) Use money collected as premiums for any purpose unrelated to workers' compensation.

(iii) Borrow from or in the name of the fund without prior department approval. The group must advise the department of the purpose of the loan, and the department may decline to approve the loan.

(iv) During any coverage period, collect less than will be needed to cover claim and administrative costs, department assessments and a contingency reserve.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-061, filed 11/17/99, effective 12/27/99.]

WAC 296-15-065 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-080 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-090 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-110 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-121 Surety for a self insurance program. (1) **What is surety?** Surety is the legal financial guarantee each self insurer must provide to the department for its self insured workers' compensation program. Failure to provide surety in the amount required by the department will result in the withdrawal of the self insurer's certification. If a self insurer defaults on (stops payment of) benefits and assessments, the department will use its surety to cover these costs.

(a) Surety must be provided on the department's form. The original will be kept by the department. Surety must cover all past, present and future self insurance liabilities.

(b) Surety may not be used by a self insurer to:

(i) Pay its workers' compensation benefits; or

(ii) Serve as collateral for any other banking transactions.

(c) Surety is not an asset of the self insurer and will not be released by the department if the self insurer files a petition for dissolution or relief under bankruptcy laws.

(d) The department will determine the amount of surety each self insurer must provide. The surety level may be increased or decreased to maintain its adequacy when necessary.

(2) What types of self insurance surety will the department accept? The department will accept the following types of surety:

(a) Cash, corporate or governmental securities deposited with a department approved escrow agent and administered by a written agreement L&I form F207-039-000 between the department, self insurer and escrow agent. Use L&I form F207-137-000 for any rider/amendment to the escrow account.

An escrow account may not be used by the self insurer to satisfy any other obligation to the bank which maintains the escrow account.

(b) A bond on L&I form F207-068-000 written by a company approved to transact surety business in Washington. Use L&I form F207-134-000 for any rider/amendment to the bond.

(c) An irrevocable standby letter of credit (LOC) on L&I form F207-112-000 if the self insurer has a net worth of at least 500 million dollars. Use L&I form F207-111-000 for any rider/amendment. LOCs are subject to acceptance by the department. Acceptance includes, but is not limited to, approval of the financial condition of the issuing or confirming bank.

(i) The issuing or confirming bank must have a location in Washington. The bank must provide the department with an audited financial statement or call report made to the banking regulatory agencies for the most recent fiscal year. An audited statement/call report is due at LOC issuance and annually while the LOC is in effect.

(ii) The self insurer must provide the department a memorandum of understanding on L&I form F207-113-000 showing the self insurer's agreement with the following conditions:

(A) The department will automatically extend an LOC for an additional year unless notified otherwise by registered mail at least sixty days prior to expiration.

(B) If the department is notified an LOC will not be replaced, and the self insurer fails to provide acceptable replacement surety within thirty days of notice:

(I) The department will draw the full value of the LOC. All proceeds of the LOC will be deposited with the department;

(II) Accrued interest in excess of the surety requirement will be returned semiannually to the self insurer; and

(III) If acceptable replacement surety is later provided, the proceeds of the LOC and accrued interest will be returned to the self insurer.

(C) If the self insurer defaults on the payment of workers' compensation benefits and has failed to provide acceptable replacement surety for an expired LOC:

(I) The title to the proceeds will be transferred to the department; and

(II) The proceeds and accrued interest will be used to pay the self insurer's workers' compensation benefits.

(D) If the self insurer defaults on the payment of workers' compensation benefits and has an LOC in force:

(I) The department will draw the full value of the LOC. All proceeds of the LOC will be deposited with the department; and

(II) The proceeds and accrued interest will be used to pay the self insurer's workers' compensation benefits.

(iii) If the self insurer provides another acceptable type of surety in the amount required by the department, the department's interest in the LOC will be released.

(iv) All legal proceedings regarding a self insurer's LOC will be subject to Washington laws and courts.

(3) How often is each self insurer's surety requirement reviewed? Each self insurer's surety requirement is reviewed annually based on the self insurer's annual report.

(4) When could a self insurer's surety level change?

(a) Surety will be maintained at the current level unless the department's estimate or an independent qualified actuary's estimate of the self insurer's outstanding claim liabilities changes by more than twenty-five thousand dollars.

(b) Surety changes are due by July 1 of each year.

(5) How does the department determine the required surety level? The department analyzes each self insurer's loss history using incurred development, paid development or other department approved actuarial methods of loss development. The following factors also may influence the surety determination:

(a) Pension claims.

(b) Reinsurance.

(c) Inconsistency in reserving practices.

(d) Independent qualified actuarial estimate.

(e) Surety cap.

(6) What is considered reinsurance? For the purposes of Title 51 RCW, excess insurance and reinsurance mean the same thing.

(7) May a self insurer reinsure part of its liability?

(a) A self insurer may reinsure up to eighty percent of its liability under Title 51 RCW.

(b) The reinsuring company and its personnel are prohibited from participating in the administration of the responsibilities of the self insurer.

(c) Reinsurance policies issued after July 1, 1975, must include endorsements which state (a) and (b) of this subsection.

(d) The self insurer must:

(i) Notify the department of the name of the insurance carrier, the extent and coverage period of the policy; and

(ii) Submit copies of all reinsurance policies in force including all modifications and renewal provisions.

(e) The department may accept a certificate of insurance on L&I form F207-095-000 in place of the policy if the certificate certifies all coverage conditions and exceptions and that the reinsurance company and its personnel do not participate in the administration of the responsibilities of the self insurer under Title 51 RCW.

(8) **What if a self insurer ends its self insured workers' compensation program?** If a self insurer voluntarily surrenders certification or has its certificate involuntarily withdrawn by the department, the former self insurer must continue to do all of the following:

(a) Pay benefits on claims incurred during its period of self insurance. Claim reopenings and new claims filed for occupational diseases incurred during the period of self insurance remain the obligation of the former self insurer.

(b) File quarterly and annual reports as long as quarterly reporting is required. A former self insurer may ask the department to release it from quarterly reporting after it has had no claim activity with the exception of pension or death benefits for a full year.

(c) Provide surety at the department required level. The department may require an increase in surety based on annual reports as they continue to be filed. Surety will not be reduced from the last required level (while self insured) until three full calendar years after the certificate was terminated. A bond may be cancelled for future obligations, but it continues to provide surety for claims occurring prior to its cancellation.

(d) Pay insolvency trust assessments for three years after surrender or withdrawal of certificate.

(e) Pay all expenses for a final audit of its self insurance program.

(9) **When could the department consider releasing surety to a former self insurer or its successor?**

(a) The department may consider releasing surety to a former self insurer or its successor when all of the following have occurred:

(i) All claims against the self insurer are closed; and

(ii) The self insurer has been released from quarterly reporting for at least ten years.

(b) If the department releases surety, the former self insurer remains responsible for claim reopenings and new claims filed for occupational disease incurred during the period of self insurance.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-121, filed 11/17/99, effective 12/27/99.]

WAC 296-15-130 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-135 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-145 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-150 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-151 Surety for a public entity's self insurance program. (1) **How does the department determine the required surety level for a public entity?** The required surety level for a public entity will be its estimated claim costs for all claims during the upcoming fiscal year.

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The minimum surety amount will be determined annually by the department.

(2) **How does a public entity provide surety?** By July 1 of each year, each public entity must submit its public entity surety certification. A public entity's surety certification must demonstrate that it has sufficient revenues in its next budget to meet its estimated claim costs for the next fiscal year by documenting:

(a) The estimated claim liabilities;

(b) Source of revenues, detailing accounts identified for self insurance obligations; and

(c) How the cumulative reserve (twenty-five percent of the required surety) is funded. Show the account balance.

(3) **What type of surety may a public entity use for its cumulative reserve?** A public entity may provide surety for its cumulative reserve using any of the surety types listed in WAC 296-15-221.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-151, filed 11/17/99, effective 12/27/99.]

WAC 296-15-161 Surety for a group self insurance program. (1) **How does the department determine the required surety level for a group self insurer?** After the initial five years of certification, the department will annually calculate the surety requirement for a group self insurer by comparing its original liability estimate to its reserve fund. If the difference is:

(a) Less than fifteen percent, the department will accept the stated reserves of the group as the required surety level.

(b) Greater than fifteen percent, the department will establish the group's required surety level.

(2) **What type of surety is acceptable for a group self insurer's reserve fund?** A group self insurer's reserve fund must be cash.

(3) **May a group self insurer pay expenses from its reserve fund?** A group self insurer may pay only the following items from its cash reserve fund:

(a) Administrative expenses for operating the group self insurance program, including claims handling expenses, legal, investigative or administrative costs and department administrative assessments.

(b) Claim expenditures. Supplemental pension fund (SPRF) benefits may also be paid from the reserve fund if the group redeposits SPRF reimbursements into the reserve account. Interest earned by the reserve account must remain in the account while this method is in effect.

(c) Reinsurance premiums. All recoveries from these policies must be redeposited into the reserve fund. Within eighteen months of premium payment, the group must return the amount paid for premiums if reinsurance recoveries were not sufficient to return the account to its original amount.

(4) **How can a group self insurer assess its members for reserve fund costs?** A group self insurer may determine how it will assess members for required reserve fund costs. The group's bylaws must describe the procedures it will use to collect these costs.

(5) **Must a group self insurer purchase reinsurance?** A group self insurer must obtain reinsurance for each year of

operation to ensure adequate protection against catastrophic or unexpected loss.

(6) **What if a group self insurer collects excess premiums during a fund year and has a surplus?** A group self insurer may refund surplus money from a fund year if it retains sufficient money to fulfill all of its workers' compensation obligations. This includes maintaining the required reserve fund.

(7) **What if a group self insurer collects insufficient premiums during a fund year and has a deficit?** A group self insurer may cover a deficit by:

(a) After receiving department approval, using:

- (i) Unencumbered surplus from a different fund year;
- (ii) An alternative method; or

(b) Assessing the membership. The department may require the group to use this method.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-161, filed 11/17/99, effective 12/27/99.]

WAC 296-15-170 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-171 Surety for a self insured pension or fatality claim. (1) **When must a self insurer provide funding for a permanent total disability (pension) or fatality claim?** Within sixty days of receipt of the department's order, the self insurer must fund the pension or fatality claim.

(2) **What types of funding may a self insurer use for a pension or fatality claim?** A self insurer may fund a pension or fatality claim with cash, a bond on L&I form F207-065-000, annuity on L&I form F207-129-000 or assignment of account on L&I form F207-058-000. If the pension benefit level increases, the self insurer must increase the surety level or provide additional surety to cover the deficiencies.

(3) **What is an annuity?** An annuity is a contract with an insurance company where the insurance company agrees to pay to the department a specific amount covering the lifetime of a claimant.

(4) **What is an assignment of account?** A self insurance assignment of account/certificate of deposit is a legal instrument executed by the self insurer and an approved commercial banking institution in Washington. The assignment of account must:

(a) Identify an existing account on deposit with the approved banking institution in the name of the self insurer. The existing assigned account must contain the amount determined necessary by the department to cover the pension benefits on the specific claim beyond all other assignments on that account. A separate assignment of account must be established for each pension.

(b) Bind the self insurer to maintain a balance in the assigned account at least equal to the current present cash value of the pension benefits on the claim and beyond all other assignments on the account for the life of the claim. Present cash values of the assigned account/certificate of deposit will be revised annually by the department. Quarterly pension payments made from the assigned account must not reduce the account balance below the present cash value of

the pension beyond all other assignments on the same account.

(c) Authorize the department, if the self insurer defaults, to immediately withdraw up to the entire amount assigned to the pension claim from the assigned account/certificate of deposit. The department will take this action without notifying the defaulting self insurer.

(d) If the bank holding the assignment of account/certificate of deposit fails, the self insurer is responsible for the entire amount of the pension or fatality obligation. Within thirty days, the self insurer must:

(i) Establish a new assignment of account/certificate of deposit, bond; or

(ii) Deposit cash into the reserve fund.

(e) If the self insurer ends its self insurance status, the assignment of account/certificate of deposit will be placed with the department. The department will determine the required reserve for the pension or fatality claim, and any excess will be returned to the former self insurer.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-171, filed 11/17/99, effective 12/27/99.]

WAC 296-15-181 Funding the benefits of an insolvent self insurer. (1) **What happens when a self insurer defaults on (stops paying) workers' compensation benefits and assessments?** When a self insurer stops paying workers' compensation benefits or assessments, and the default is not due to a claims administration decision, the department will take over its surety and claims. The department will manage the claims and bill the surety each quarter to reimburse benefits paid.

(2) **If a defaulting self insurer has multiple types of surety, who determines the order in which surety will be used?** The department has the sole authority to determine the order in which surety types will be used.

(3) **What happens if the defaulting self insurer's surety is exhausted?** When surety is exhausted, the insolvency trust (all self insurers except school districts, cities and counties) will be assessed quarterly to cover the claim costs paid on behalf of the defaulted self insurer.

(4) **Who is on the insolvency trust board?** The insolvency trust board consists of the director or designee, three representatives of self insured employers and one representative of workers. Representatives are nominated by the self insured and labor communities and are appointed by the director for overlapping two year terms.

(5) **What does the insolvency trust board do?** The board advises the department on insolvency trust matters. The department makes all final decisions.

(6) **What annual report is provided on the insolvency trust fund?** The department provides an annual written status report on the insolvency trust fund as of the end of the previous calendar year to the workers' compensation advisory committee. The report is presented at the committee's first quarterly meeting no later than March 31.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-181, filed 11/17/99, effective 12/27/99.]

WAC 296-15-210 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-215 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-220 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-15-221 Self insurers' reporting requirements. (1) **What information must self insurers report to the department?** Each self insurer must provide the department:

(a) The name, title, address and phone number of the single contact person who is the liaison with the department in all self insurance matters. This contact will be sent all department correspondence and is responsible for forwarding information to appropriate parties for timely action.

(b) A copy of its current policy of applying sick leave, health and welfare benefits or any other compensation in conjunction with, or as a substitute for, time loss benefits.

(2) **When must self insurers notify the department of business status changes?** Self insurers must notify the department in writing:

(a) Immediately, of any plans to:

(i) Cease business entirely or cease business in Washington; or

(ii) Dispose of controlling financial interest of the original self insurer. The self insurer must surrender its certificate for cancellation if requested by the department.

(b) Within thirty days, of any:

(i) Amendment(s) or modification(s) to the self insurer's articles, charter or agreement of incorporation, association, copartnership or sole proprietorship which will materially change the business identity or structure originally certified.

(A) The department may require additional documentation.

(B) If the self insurer becomes a subsidiary to another firm, the parent must provide the department with its written guarantee on L&I form F207-040-001 to assume responsibility for all workers' compensation liabilities of the subsidiary if the subsidiary defaults on its liabilities. See WAC 296-15-021 for additional information.

(ii) Separation (for example, divestiture or spinoff) of any part of the original self insurer.

(A) The original self insurer remains responsible for claims liability of the separated part up to the date of separation unless the department approves an alternative.

(B) If the separating part wishes to continue self insurance, it must submit an application to the department at least thirty days before separation and requested certification.

(C) If certification cannot be granted before separation, industrial insurance coverage must be purchased from the state fund from the date of separation.

(iii) Relocating, adding or closing physical locations.

(3) **When must self insurers notify the department of administrative changes?** A self insurer must notify the department in writing within ten days, of any change to its:

(a) Single contact person who is the liaison with the department in all self insurance matters. Include the contact's title, address and phone number.

(b) Contract with a service organization/third party administrator independent of the self insurer which will participate in the self insurer's responsibilities. Submit a copy of the service contract. See WAC 296-15-021 for additional information.

(c) Administrator of its workers' compensation program.

(4) **What reports must self insurers submit to the department?** Each self insurer must submit:

(a) Complete and accurate quarterly reports summarizing worker hours and claim costs paid the previous quarter. Use a form substantially similar to the preprinted SIQTRR form sent by the department. Payment is due the 30th day after receiving the preprinted report from the department. This report is the basis for determining the administrative, second injury fund, supplemental pension, asbestosis and insolvency trust assessments.

(i) Administrative, second injury fund and insolvency trust assessments are based on a self insurer's total claim costs. Total claim costs during a quarter include, but are not limited to:

(A) Time loss compensation. Include the amount of time loss the worker would have been entitled to if kept on full salary.

(B) Permanent partial disability (PPD) awards.

(C) Medical bills.

(D) Prescriptions.

(E) Medical appliances.

(F) Independent medical examinations and/or consultations.

(G) Loss of earning power.

(H) Travel expenses for treatment or rehabilitation.

(I) Vocational rehabilitation expenses.

(J) Penalties paid to injured workers.

(K) Interest on board orders.

(ii) Supplemental pension (SPRF) and asbestosis fund assessments are based on a self insurer's worker hours. Worker hours must be reported as defined in chapter 296-17 WAC General reporting rules, classifications, audit and recordkeeping, rates and rating system for Washington workers' compensation insurance.

Note: Self insurers may request reimbursement quarterly from SPRF as authorized under Title 51 RCW. Use a form substantially similar to L&I form F207-011-000 or F207-011-222, if there is social security offset.

(iii) The administrative assessment covers department administrative costs, including expenses of other department divisions, the University of Washington environmental research facility, the board of industrial insurance appeals and other general administrative costs. The administrative assessment rate is applied to a self insurer's total claim costs.

(A) The administrative assessment rate is based on the actual costs of the previous fiscal year and the anticipated costs of the upcoming fiscal year. Employers certified after the fiscal year used for calculation will be assessed at a rate that does not include prior fiscal periods.

(B) Employers no longer self insured must pay an adjusted assessment rate until one year after all self insurance liabilities and responsibilities are terminated.

(C) The minimum quarterly assessment is twenty-five dollars.

(iv) The second injury fund rate will be based on anticipated second injury fund costs.

(A) Self insurers' contributions to the second injury fund will be recorded in the self insurers' account, separate from the state fund account.

(B) The self insurers' second injury fund must maintain a two hundred thousand dollar minimum balance.

(v) Insolvency trust members (all self insurers except school districts, cities and counties) are also assessed to cover claim payments made by the department on behalf of insolvent self insurers. School districts, cities and counties are exempt from and are not covered by this insolvency trust. Any interest earned on the assessment becomes part of the insolvency trust fund. The insolvency assessment rate is applied to a self insurer's total claim costs. Failure to pay an insolvency trust assessment is grounds for withdrawal of certification. Members who voluntarily surrender certification must continue to pay this assessment for three years after the date of surrender.

(b) Complete and accurate annual report of all claim costs paid for each year of liability with an estimate of future claim costs. Use a form substantially similar to SIF-7 L&I form F207-007-000. This report is due March 1 and is the basis for the department's annual determination of each self insurer's surety requirement.

(c) Fully audited financial statement within six months after the end of the self insurer's fiscal year. This report demonstrates the self insurer's continued ability to provide benefits and assessments as required. The department will consider a written request for filing time extension.

(i) This statement must be prepared by a certified public accountant.

(ii) A self insurer with a parental guarantee may submit the parent's fully audited financial statement if the parent's audited statement includes the financial condition of all subsidiaries, including the self insurer.

(iii) A political subdivision of the state may submit a state auditor's report if it includes the self insurer's audited financial statement. If the state auditor does not audit annually, political subdivisions must submit financial statements prepared internally for the years between reports by the state auditor.

[Statutory Authority: RCW 51.14.077, 51.14.120(7), 51.14.150(4), 51.14.160, 51.44.040(3), 51.44.070 and 51.44.150. 99-23-107, § 296-15-221, filed 11/17/99, effective 12/27/99.]

Chapter 296-17 WAC

**GENERAL REPORTING RULES,
CLASSIFICATIONS, AUDIT AND
RECORDKEEPING, RATES AND RATING SYSTEM
FOR WASHINGTON WORKERS' COMPENSATION
INSURANCE**

WAC

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**DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER**

- 296-17-58505 Classification 3413. [Statutory Authority: RCW 51.16.035. 98-18-042, § 296-17-58505, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-58505, filed 5/31/96, effective 7/1/96.] Repealed by 99-18-068, filed 8/31/99, effective 10/1/99. Statutory Authority: RCW 51.16.035.

WAC 296-17-31007 Owner coverage. (1) **As a business owner, can I buy workers' compensation insurance to cover myself?**

Yes. If you are a sole proprietor, partner, corporate officer, or member of a limited liability company you may not be required to have industrial insurance coverage as provided in RCW 51.12.020. In these instances, you can still obtain workers' compensation coverage from us. We refer to this coverage as optional coverage since as the owner/officer, you are not required to have this insurance. Because owner insurance coverage is optional, you must meet certain conditions and requirements which are detailed on the *application for owner/officer optional coverage*. These requirements include:

- Completing an application for optional owner/officer coverage;
- Reporting owner/officer hours in the classification assigned to your business that is applicable to the work being performed by the owner/officer;
- Submitting a supplemental report which lists the name of each covered owner/officer; and
- Reporting four hundred eighty hours or actual hours worked each quarter for each covered owner/officer and in the applicable workers' compensation classification code.

(2) **When will my owner/officer coverage become effective?**

Your coverage will become effective upon receipt of your application in the department unless you indicate a future date. We will not make coverage effective on a date prior to our receipt of your completed application for owner/officer coverage.

(3) **Where can I obtain an application for owner/officer coverage?**

To obtain a copy of this application, contact your local labor and industries office. We are listed in the government pages of your local directory or you can call our underwriting section at (360) 902-4817.

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-31007, filed 11/29/99, effective 12/31/99. Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-31007, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-31007, filed 8/28/98, effective 10/1/98.]

WAC 296-17-31012 Classification assignment. (1) **How are classifications assigned to my business?**

We will assign a basic classification or classifications to your business based on the nature of the business you are engaged in. We will not assign classifications to your business based on the individual operations, duties or occupations of individuals found within your business unless the basic classification assigned to your business either requires or permits a separate classification treatment for specified operations or employments. Exceptions to this approach are outlined in WAC 296-17-31017 and 296-17-31018.

(2) **Does this same classification approach apply if I have several businesses?**

This classification approach will apply to each separate legal entity. Each separate legal entity will be classified on its own merits.

(3) **How do you decide what classification(s) to assign to my business?**

To determine what classification(s) to assign to your business, we need enough information to give us a clear understanding of the precise nature of your business and the hazards your business poses to your workers. In some cases we will need to call you to obtain more detailed information about your business. Occasionally one of our field representatives may visit your business to gain a better understanding of the nature of your business. In most cases we will find a classification that specifically describes your business.

Example: You operate a company that sells baked goods to retail customers. Before we can classify your business we need to determine whether you bake the goods you are selling or are simply selling goods another business has baked. Once we have determined the precise nature of your business, we will review all of the available classifications to find the one that best describes the entire business. If the business has baked the products they are selling, we would consider a bakery classification or maybe a restaurant classification. If your business simply sells baked goods that another business made, we may look at a retail store classification. In most cases we will find a classification that specifically describes the business we are classifying.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-31012, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-31012, filed 8/28/98, effective 10/1/98.]

WAC 296-17-31013 Building construction. (1) **Does this same classification approach apply to building and construction contractors?**

Yes, but it may not appear that way without further explanation. We classify contractors by phase and type of construction since it is common for each contract to vary in scope.

*Example: A contractor who builds and remodels private residences may frame the structure and work on no other phases of the project. On another job the same contractor may do only the interior finish carpentry. On still another job the contractor may install a wood deck or build a garden arbor. Each of these carpentry activities is covered by a different classification code. To ensure that contractor businesses receive the same treatment as other businesses, we assign classifications according to the phases and types of construction they contract to perform. Since some contractors specialize in one area of construction, such as plumbing, roofing, insulation, or electrical services, this classification approach mirrors that of nonbuilding contractor businesses. The policy of assigning several basic classifications to contractors engaged in multiple phases of construction may seem to be in conflict with the classification approach used for nonbuilding contractor businesses, but we have simply used the **multiple business classification approach**.*

If we have assigned multiple classifications to your construction business you should take special care in maintaining the records required in the auditing and recordkeeping section of this manual. If we discover that you have failed to keep the required records we will assign all worker hours for

which the records were not maintained to the highest rated classification applicable to the work that was performed.

(2) Who does this rule apply to?

If you are a building, construction or erection contractor and we have assigned one or more of the following classifications to your business, this rule applies to you: 0101, 0103, 0104, 0105, 0107, 0108, 0201, 0202, 0210, 0212, 0214, 0217, 0219, 0301, 0302, 0303, 0306, 0307, 0403, 0502, 0504, 0506, 0507, 0508, 0509, 0510, 0511, 0512, 0513, 0514, 0516, 0517, 0518, 0519, 0521, 0524, 0526, 0527, 0528, 0529, 0530, 0531, 0532, 0533, 0534, 0601, 0602, 0603, 0607, 0608, and 0701.

(3) Can I have a single classification assigned to my business to cover a specific construction project?

Yes, to simplify recordkeeping and reporting requirements we will assign a single classification to cover an entire project.

(4) How do I request the single classification for one of my construction projects?

You should send your request to the attention of your policy manager at the address below:

Department of Labor and Industries
P.O. Box 44144
Olympia, Washington 98504-4144

(5) If I have asked for a single classification on one of my construction projects, how do you determine which classification will apply?

You must supply us with a description of the project and a break down of the total number of hours of exposure by phase of construction that you are responsible for.

Example: You notify us that your company will be responsible for all plumbing and iron erection work on a commercial building site. You have requested a single classification for this project. In your request you tell us that you estimate that it will take one thousand work hours to perform all the plumbing work and five hundred work hours to do the steel erection work.

With this information we will estimate the premiums by classification.

Example: We determine that the plumbing work is covered under classification 0306 and the steel erection work is covered under classification 0518. Assume that classification 0306 has an hourly premium rate of \$1.50 and classification 0518 has an hourly premium rate of \$2.55. We estimate the total premium on this job to be \$2,775 (1,000 hours x \$1.50 = \$1,500 + 500 hours x \$2.55 = \$1,275).

Our next step in this process is to develop an average hourly rate for the project. We will use this information to select the single classification which will apply to this project.

Example: We will take the estimated premium (\$2,775) and divide this number by the estimated hours (1,500) and arrive at an average hourly rate of \$1.85.

To select the single classification that will apply to a construction project, we will compare the average hourly rate that we have computed to the rates of the classifications applicable to the project. We will select the classification whose hourly rate is the closest to the average hourly rate that we computed from the information you supplied us with.

Example: From the information you supplied, we have determined that the average hourly rate for this project is \$1.85. We also know that the rate for the plumbing classification (0306) is \$1.50 per hour and the rate for steel erection is \$2.55 per hour. We would assign classification 0306 as the single classification applicable to this project.

(6) How will I know what classification will apply to my construction project?

We will send you a written notice which will specify the basic classification and premium rate that will apply to this project.

(7) If I have asked for a single classification to cover one of my construction projects, am I required to use the single classification which you gave me?

No, but you should call your policy manager to verify what other classifications would apply to the project. The name and phone number of your policy manager can be found on your quarterly premium report or your annual rate notice. For your convenience you can call us at (360) 902-4817 and we will put you in contact with your assigned policy manager.

(8) I am a general construction or erection contractor, I subcontract all my work and have no employees of my own. Do I have to report to the department of labor and industries?

No, since you do not have employees, you do not need to report to the department of labor and industries. You should be aware that the workers' compensation insurance laws of Washington include certain independent contractors as workers. If we determine that an independent contractor that you used qualifies as a covered worker, you will be responsible for the premium due for their work time. You can also be held responsible for premiums due to labor and industries if you subcontract with an unregistered contractor and they fail to pay premiums on behalf of their employees. It is in your best interest to make sure that your subcontractors are registered contractors by contacting us at 1-800-647-0982.

(9) Am I required to keep any special records of subcontractors that I use?

Yes, you are required to keep certain information about the subcontractors that you use. The information required is:

- Subcontractor's legal name;
- Contractor registration number and expiration date;
- UBI number (or labor and industries account ID number).

If you supply materials to a subcontractor, also keep a record of the:

- Amount of material supplied;
- Project name or location;
- Date material was supplied; and
- Completion date of contracted work.

Failure to maintain these records may result in the subcontractor being considered a covered worker for whom you must report hours.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-31013, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-31013, filed 8/28/98, effective 10/1/98.]

WAC 296-17-31018 Exception classifications. (1) What are exception classifications?

In WAC 296-17-31012 we discussed our classification policy. We described the process used to classify risk and stated that we assign the basic classification or basic classifications that best describe the nature of your company's business. While this policy is modeled after the policy used by private insurance carriers and is geared to administrative ease for you, we recognize that there are some duties or operations where your employees do not share the same general workplace hazards that your other employees are exposed to. To provide for those operations that are outside the scope of a basic classification, we have created three types of exception classifications listed below:

- Standard exception classifications,
- Special exception classifications, and
- General exclusion classifications.

(2) What are the standard exception classifications?

Standard exception classifications cover those employments that are administrative in nature and common to many industries. Employees covered by a standard exception classification cannot be exposed to any operative hazard of the business. If the language of the basic classification assigned to your business does not include these employments, you may be able to report them separately. The standard exception classifications are:

- Classification 4904 (WAC 296-17-653) "clerical office employment." This classification includes clerical, administrative, and drafting employees.
- Sales personnel classifications 6301 (WAC 296-17-696), 6302 (WAC 296-17-697), and 6303 (WAC 296-17-698) includes outside sales personnel and messengers.
- Classification 7101 (WAC 296-17-754) applies to corporate officers who have elected optional coverage. A corporate officer as used in these rules is a person who is an officer in the corporation, such as the president, who also serves on the corporation's board of directors and owns stock in the corporation.
- Classification 7100 (WAC 296-17-75306) applies to members of a limited liability company who have elected optional coverage.

Clerical office employees are defined as employees whose duties are limited to: Answering telephones; handling correspondence; creating or maintaining financial, employment, personnel, or payroll records; composing informational material on a computer; creating or maintaining computer software; and technical drafting. Their work must be performed in a clerical office which is restricted to:

- A work area which is physically separated by walls, partitions, or other physical barriers, from all other work areas of the employer, and
- Where only clerical office work as described in this rule is performed.

A clerical office does not include any work area where inventory is located, where products are displayed for sale, or area where the customer brings products for payment. Clerical office employees can perform cashiering and telephone sales work if they do not provide any retail or wholesale customer service that involves handling, showing, demonstrating, or delivering any product sold by the employer. Clerical office employees can make bank deposits, pick up and

deliver mail at the post office, or purchase office supplies, if their primary work duties are clerical office duties as defined in this rule.

Sales personnel are defined as employees whose duties are limited to: Soliciting new customers by telephone or in person; servicing existing customer accounts; showing, selling, or explaining products or services; completing correspondence; placing orders; performing public relations duties; and estimating. Although some of sales person's duties may be performed in a clerical office, most of their work is conducted away from the employer's physical business location or in showrooms. We refer to work that takes place away from the employer's premises as "outside sales." Sales personnel whose duties include customer service activities such as, but not limited to, the delivery of product, stocking shelves, handling inventory, or otherwise merchandising products sold to retail or wholesale customers are excluded from all standard exception classifications. Sales personnel with duties such as delivery and stocking of shelves are to be reported in the basic classification applicable to the business unless the basic classification assigned to the business requires another treatment.

Messengers are defined as employees whose duties are delivering interoffice mail, making deposits, and similar duties that are exclusively for the administration of the employer's business. Classification 6303 "messengers" does not include delivering mail or packages to the employer's customer or as a service to the public. If a messenger is engaged in delivering mail or packages as a service to the public they are to be assigned to the basic classification of the business or classification 1101 as applicable.

Corporate officers duties in classification 7101 must be limited to: Clerical duties; outside sales duties as described above; administrative duties such as hiring staff, attending meetings, negotiating contracts, and performing public relations work. To qualify for this classification, a corporate officer must:

- Be a shareholder in the corporation,
- Be elected as a corporate officer and empowered in accordance with the articles of incorporation or bylaws of the corporation,
- Serve on the corporation's board of directors,
- Not have any exposure to any operative hazard of the business, and
- Not directly supervise employees who have any exposure to any operative hazard of the business.

Members of a limited liability company (LLC) duties in classification 7100 must be limited to: Clerical duties; outside sales duties as described above; administrative duties such as hiring staff, attending meetings, negotiating contracts, and performing public relations work. This includes only those members who have duties and authority similar to the exemption criteria of corporate officers in RCW 51.12.020.

Classification 6303 may apply to a corporate officer or member of a limited liability company whose duties are limited to outside sales activities as described in the sales personnel section of this rule. Under no circumstance is classification 4904 to be assigned to any corporate officer or member of a limited liability company. You cannot divide the work hours of an employee between a standard exception classifi-

cation and a basic classification unless it is permitted by another rule. If an employee works part of their time in a standard exception classification and part of their time in your basic classification, then all exposure (hours) must be reported in the highest rated basic classification applicable to the work being performed.

(3) What are the special exception classifications?

Special exception classifications represent operations found within an employer's business that are allowed to be reported separately when certain conditions are met. Assuming the conditions have been met, the following classifications may be used even if your basic classification includes the phrases "all operations" or "all employees."

Security guards - classification 6601 (WAC 296-17-723) will apply if the security guard:

- Is an employee of an employer engaged in logging or construction,
- Is for the purpose of guarding the employer's logging or construction sites,
- Is employed at the site only during the hours the employer is not conducting any other operations at the site,
- Has no other duties during their work shift as a security guard.

If all of the above conditions are not met, the security guard is to be reported in the basic classification applicable to the construction or logging operation being conducted.

Janitors - classification 6602 (WAC 296-17-724) will apply if:

- The janitorial/cleaning activities being performed are limited to the employer's clerical office,
- The clerical office meets the criteria described earlier in this rule, and
- The employer's office employment is assigned to be reported in classification 4904.

Log truck drivers - classification 5003 (WAC 296-17-66001) will apply if the log truck driver has no other duties during their work shift that are subject to the logging classification 5001 (WAC 296-17-659).

(4) What are the general exclusion classifications?

General exclusion classifications represent operations that are so exceptional or unusual that they are excluded from the scope of all basic classifications. If you have these operations, we will assign a separate classification to cover them. You must keep accurate records of the work hours your employees work in these classifications. If you do not keep accurate time records for each employee performing work covered by a general exclusion classification, we will assign the work hours in question to the highest rated classification applicable to those hours. The general exclusion classifications are:

- Aircraft operations: All operations of the flying crew.
- Racing operations: All operations of the drivers and pit crews.
- Diving operations: All operations of diving personnel and ship tenders who assist in diving operations.
- New construction or alterations of the business premises.
- Musicians and entertainers.

A division of work time is permitted between a standard exception classification and flight crew operations, racing operations, or diving operations. If you fail to keep original

time records that clearly show the time spent in the office or in sales work, we will assign all work hours in question to the highest rated classification applicable to the work hours in question.

Example: Assume a corporate officer performs duties which are described in classification 7101. Occasionally, the officer flies a plane to attend a meeting. You would report the flying exposure (hours) of the corporate officer in classification 6803. The remainder of the corporate officer's time would continue to be reported in classification 7101.

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073, 99-24-055, § 296-17-31018, filed 11/29/99, effective 12/31/99. Statutory Authority: RCW 51.16.035, 98-18-042, § 296-17-31018, filed 8/28/98, effective 10/1/98.]

WAC 296-17-31021 Units of exposure. (1) What is a "unit of exposure?"

A unit of exposure is the measure which is used to help determine the premium you will pay. For most businesses the unit of exposure is the *hours* worked by their employees. Because not all employees are compensated based on the hours they work, we have developed reporting alternatives to make reporting to us easier.

Example: Employers in the horse racing industry pay their premiums based on a type of license their employees hold rather than the hours the employees work. Drywall contractors pay premiums based on the square footage of the materials they install rather than the hours it took their employees to install the drywall material.

In other instances, we have developed daily, weekly, or monthly *assumed* work hours.

Example: Commission sales employees who work primarily away from your premises, such as a real estate sales person, are to be reported on the basis of eight hours per day or forty hours per week.

(2) What are the alternatives to actual hours worked?

The exceptions are:

- **Apartment house managers, caretakers, or similar employees:** To determine the number of hours you need to report to us, divide an employee's total compensation, including housing and utility allowances, by the average hourly wage for the classification. The total number of work hours to be reported for each employee is not to exceed 520 hours per quarter. You will need to call us at (360) 902-4817 to obtain average hourly wage information.
- **Baseball, basketball, and soccer teams - including players, coaches, trainers, and officials:** Report each individual at 40 hours per week for each week in which they have duties.
- **Commission employees - outside (such as, but not limited to, real estate and insurance sales):** You must select one of the following methods to report your commission employees - outside:
 - Actual hours worked; or
 - Assumed hours of eight hours per day for part-time employees or forty hours per week for full-time employees.

All outside commission employees of an employer must be reported by the same method. You must report either the actual hours worked for each employee or one hundred sixty hours per month. You cannot report

some outside commission employees based on the actual hours they work and others using the one hundred sixty hours per month method.

- **Drywall - stocking, installation, scrapping, taping, and texturing:** Premiums are based on material installed/finished rather than the hours it took to install/finish the drywall.
- **Horse racing - excluding jockeys:** Premiums are paid on a license basis and collected by the Washington horse racing commission at the time of licensing.
- **Jockeys:** Report ten hours for each race/mount or for any day in which duties are reported.
- **Race car drivers:** Report ten hours for each race/heat.
- **Salaried employees:** All salaried employees of an employer must be reported by the same method. You must report either the actual hours worked for each employee *or* one hundred sixty hours per month. You cannot report some salaried workers based on the actual hours they work and others using the one hundred sixty hours per month method.

(3) Can I use assumed work hours for piece workers?

No, if you employ piece workers you must report the actual hours these individuals work for you unless another unit of exposure is required.

Example: If you have employees engaged in drywall work you would report and pay premiums on the basis of the square footage of the material they installed not the hours they worked.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-31021, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-31021, filed 8/28/98, effective 10/1/98.]

WAC 296-17-35201 Recordkeeping and retention.

Washington law (RCW 51.48.030) requires every employer to make, keep, and preserve records which are adequate to facilitate the determination of premiums due to the state for workers' compensation insurance for their covered workers. In the administration of Title 51 RCW, the department of labor and industries has deemed the records and information required in the various subsections of this section to be essential in the determination of premiums due to the state fund. The records so specified and required, shall be provided at the time of audit to any authorized representative of the department who has requested them.

Failure to produce the requested records within thirty days of the request, or within an agreed upon time period shall constitute prima facie evidence of noncompliance with this rule and shall invoke the statutory bar to challenge found in RCW 51.48.030 and/or RCW 51.48.040.

(1) Employment records. Every employer shall with respect to each worker, make, keep, and preserve original records containing all of the following information for three full calendar years following the calendar year in which employment occurred:

- (a) The name of each worker;
- (b) The Social Security number of each worker;
- (c) The beginning date of employment for each worker and, if applicable, the separation date of employment of each such worker;
- (d) The basis upon which wages are paid to each worker;
- (e) The number of units earned or produced for each worker paid on a piecework basis;

(f) The risk classification applicable to each worker whenever the worker hours of any one employee are being divided between two or more classifications;

(g) The number of actual hours worked (WAC 296-17-31002) by each worker, unless another basis of computing hours worked is prescribed in WAC 296-17-31021;

(h) A summary time record for each worker showing the calendar day or days of the week work was performed and the actual number of hours worked each work day;

(i) The workers' total gross pay period earnings;

(j) The specific sums withheld from the earnings of each worker, and the purpose of each sum withheld;

(k) The net pay earned by each such worker.

(2) Business, financial records, and record retention. Every employer is required to keep and preserve all original employment time records for three full calendar years following the calendar year in which employment occurred. The three-year period is specified in WAC 296-17-352 as the composite period from the date any such premium became due.

Employers who pay their workers by check are required to keep and preserve all check registers and bank statements. Employers who pay their workers by cash are required to keep and preserve records of these cash transactions which provide a detailed record of wages paid to each worker.

(3) Recordkeeping - Estimated premium computation. Any employer required by this section to make, keep, and preserve records containing the information as specified in subsections (1) and (2) of this section, who fails to make, keep, and preserve such records, shall for the purpose of premium calculation assume worker hours using the average hourly wage rate for each classification, and also will be subject to penalties prescribed in subsection (4) of this section. The records of the department as compiled for the preceding fiscal year ending June 30, shall be the basis for determining the average hourly wage rate: Provided, That the average hourly wage rate shall be no less than the state minimum wage existing at the time such assumed hours are worked. Notwithstanding any other provisions of this section, workers employed in a work activity center subject to Classification 7309 shall be reported on the basis of the average hourly wage.

(4) Failure to maintain records - Penalties. Any employer required by this section to make, keep, and preserve records containing the information as specified in subsections (1) and (2) of this section, who fails to make, keep, and preserve such record, shall be liable, subject to RCW 51.48.030, to a penalty in the amount of two hundred fifty dollars for each such offense. Failure to make, keep, and preserve records containing the information as specified in subsections (1) and (2) of this section, for a single employee shall constitute one offense, for two employees two offenses, and so forth.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-35201, filed 8/31/99, effective 10/1/99. Statutory Authority: RCW 51.04.020, 95-08-052, § 296-17-35201, filed 4/3/95, effective 7/1/95.]

WAC 296-17-35203 Special reporting instruction. (1) Professional and semiprofessional athletic teams. Athletes assigned to a Washington-domiciled sports team are mandatorily covered by Washington industrial insurance: Provided,

That a professional athlete who is under contract with a parent team domiciled outside of the state of Washington while assigned to a team domiciled within Washington is subject to mandatory coverage by Washington industrial insurance unless the player and employer (parent team) have agreed in writing as to which state shall provide coverage in accordance with RCW 51.12.120(5).

The following rules shall apply to the written agreement:

(a) Agreement must be in writing and signed by the employer and the individual athlete.

(b) Agreement must specify the state that is to provide coverage. The state agreed upon to provide coverage must be a state in which the player's team, during the course of the season, will engage in an athletic event. For example, if the Washington-based team is a part of a league with teams in only Washington, Oregon, and Idaho, the player and the employer can agree to any of those three states to provide coverage. However, they could not agree to have California provide the coverage as this would not qualify as a state in which the player regularly performs assigned duties.

(c) The state agreed upon accepts responsibility for providing coverage and acknowledges such to the department by certified mail.

(d) Agreement and certification by the other state must be received by this department's underwriting section prior to any injury incurred by the athlete.

(e) Agreement will be for one season only commencing with the assigning of the player to a particular team. A separate agreement and certification must be on file for each additional season.

Failure to meet all of these requirements will result in the athlete being considered a Washington worker for premium and benefit purposes until such time as all requirements have been met.

Professional sports teams who are domiciled outside the state of Washington and who participate in sporting events with Washington-domiciled teams are not subject to Washington industrial insurance for their team members while in this state. These out-of-state teams are not considered employers subject to Title 51 on the basis that they are not conducting a business within this state.

(2) **Excluded employments.** Any employer having any person in their employ excluded from industrial insurance whose application for coverage under the elective adoption provisions of RCW 51.12.110 or authority of RCW 51.12.095 or 51.32.030 has been accepted by the director shall report and pay premium on the actual hours worked for each such person who is paid on an hourly, salaried-part time, percentage of profit or piece basis; or one hundred sixty hours per month for any such person paid on a salary basis employed full time. In the event records disclosing actual hours worked are not maintained by the employer for any person paid on an hourly, salaried-part time, percentage of profits or piece basis the worker hours of such person shall be determined by dividing the gross wages of such person by the state minimum wage for the purpose of premium calculation. However, when applying the state minimum wage the maximum number of hours assessed for a month will be one hundred sixty.

(3) **Special trucking industry rules.** The following subsection shall apply to all trucking industry employers as applicable.

(a) **Insurance liability.** Every trucking industry employer operating as an intrastate carrier or a combined intrastate and interstate carrier must insure their workers' compensation insurance liability through the Washington state fund or be self-insured with the state of Washington.

Washington employers operating exclusively in interstate or foreign commerce or any combination of interstate and foreign commerce must insure their workers' compensation insurance liability for their Washington employees with the Washington state fund, be self-insured with the state of Washington, or provide workers' compensation insurance for their Washington employees under the laws of another state when such other state law provides for such coverage.

Interstate or foreign commerce trucking employers who insure their workers' compensation insurance liability under the laws of another state must provide the department with copies of their current policy and applicable endorsements upon request.

Employers who elect to insure their workers' compensation insurance liability under the laws of another state and who fail to provide updated policy information when requested to do so will be declared an unregistered employer and subject to all the penalties contained in Title 51 RCW.

(b) **Reporting.** Trucking industry employers insuring their workers' compensation insurance liability with the Washington state fund shall keep and preserve all original time records/books including supporting information from drivers' logs for a period of three calendar years plus three months.

Employers are to report actual hours worked, including time spent loading and unloading trucks, for each driver in their employ. For purposes of this section, actual hours worked does not include time spent during lunch or rest periods or overnight lodging.

Failure of employers to keep accurate records of actual hours worked by their employees will result in the department estimating work hours by dividing gross payroll wages by the state minimum wage for each worker for whom records were not kept. However, in no case will the estimated or actual hours to be reported exceed five hundred twenty hours per calendar quarter for each worker.

(c) **Exclusions.** Trucking industry employers meeting all of the following conditions are exempted from mandatory coverage.

(i) Must be engaged exclusively in interstate or foreign commerce.

(ii) Must have elected to cover their Washington workers on a voluntary basis under the Washington state fund and must have elected such coverage in writing on forms provided by the department.

(iii) After having elected coverage, withdrew such coverage in writing to the department on or before January 2, 1987.

If all the conditions set forth in (i), (ii), and (iii) of this subsection have not been met, employers must insure their workers' compensation insurance liability with the Washington state fund or under the laws of another state.

(d) Definitions. For purposes of interpretation of RCW 51.12.095(1) and administration of this section, the following terms shall have the meanings given below:

(i) "Agents" means individuals hired to perform services for the interstate or foreign commerce carrier that are intended to be carried out by the individual and not contracted out to others but does not include owner operators as defined in RCW 51.12.095(1).

(ii) "Contacts" means locations at which freight, merchandise, or goods are picked up or dropped off within the boundaries of this state.

(iii) "Doing business" means having any terminals, agents or contacts within the boundaries of this state.

(iv) "Employees" means the same as the term "worker" as contained in RCW 51.08.180.

(v) "Terminals" means a physical location wherein the business activities (operations) of the trucking company are conducted on a routine basis. Terminals will generally include loading or shipping docks, warehouse space, dispatch offices and may also include administrative offices.

(vi) "Washington" shall be used to limit the scope of the term "employees." When used with the term "employees" it will require the following test for benefit purposes (all conditions must be met).

- The individual must be hired in Washington or must have been transferred to Washington; and
- The individual must perform some work in Washington (i.e., driving, loading, or unloading trucks).

(4) Forest, range, or timber land services—Industry rule. Washington law (RCW 51.48.030) requires every employer to make, keep, and preserve records which are adequate to facilitate the determination of premiums (taxes) due to the state for workers' compensation insurance coverage for their covered workers. In the administration of Title 51 RCW, and as it pertains to the forest, range, or timber land services industry, the department of labor and industries has deemed the records and information required in the various subsections of this section to be essential in the determination of premiums (taxes) due to the state fund. The records so specified and required, shall be provided at the time of audit to any representative of the department who has requested them.

Failure to produce these required records within thirty days of the request, or within an agreed upon time period, shall constitute noncompliance of this rule and RCW 51.48.030 and 51.48.040. Employers whose premium computations are made by the department in accordance with (d) of this subsection are barred from questioning, in an appeal before the board of industrial insurance appeals or the courts, the correctness of any assessment by the department on any period for which such records have not been kept, preserved, or produced for inspection as provided by law.

(a) General definitions. For purpose of interpretation of this section, the following terms shall have the meanings given below:

(i) "Actual hours worked" means each workers' composite work period beginning with the starting time of day that the employees' work day commenced, and includes the entire work period, excluding any nonpaid lunch period, and ending

with the quitting time each day work was performed by the employee.

(ii) "Work day" shall mean any consecutive twenty-four-hour period.

(b) Employment records. Every employer shall with respect to each worker, make, keep, and preserve original records containing all of the following information for three full calendar years following the calendar year in which the employment occurred:

(i) The name of each worker;

(ii) The Social Security number of each worker;

(iii) The beginning date of employment for each worker and, if applicable, the separation date of employment for each such worker;

(iv) The basis upon which wages are paid to each worker;

(v) The number of units earned or produced for each worker paid on a piece-work basis;

(vi) The risk classification(s) applicable to each worker;

(vii) The number of actual hours worked by each worker, unless another basis of computing hours worked is prescribed in WAC 296-17-31021. For purposes of chapter 296-17 WAC, this record must clearly show, by work day, the time of day the employee commenced work, and the time of day work ended;

(viii) A summary time record for each worker showing the calendar day or days of the week work was performed and the actual number of hours worked each work day;

(ix) In the event a single worker's time is divided between two or more risk classifications, the summary contained in (b)(viii) of this subsection shall be further broken down to show the actual hours worked in each risk classification for the worker;

(x) The workers' total gross pay period earnings;

(xi) The specific sums withheld from the earnings of each worker, and the purpose of each sum withheld;

(xii) The net pay earned by each such worker.

(c) Business, financial records, and record retention. Every employer is required to keep and preserve all original time records completed by their employees for a three-year period. The three-year period is specified in WAC 296-17-352 as the composite period from the date any such premium became due.

Employers who pay their workers by check are required to keep and preserve a record of all check registers and cancelled checks; and employers who pay their workers by cash are required to keep and preserve records of these cash transactions which provide a detailed record of wages paid to each worker.

(d) Recordkeeping - estimated premium computation. Any employer required by this section to make, keep, and preserve records containing the information as specified in (b) and (c) of this subsection, who fails to make, keep, and preserve such records, shall have premiums calculated as follows:

(i) Estimated worker hours shall be computed by dividing the gross wages of each worker for whom records were not maintained and preserved, by the state's minimum wage, in effect at the time the wages were paid or would have been paid. However, the maximum number of hours to be assessed

under this provision will not exceed five hundred twenty hours for each worker, per quarter for the first audited period. Estimated worker hours computed on all subsequent audits of the same employer that disclose a continued failure to make, keep, or preserve the required payroll and employment records shall be subject to a maximum of seven hundred eighty hours for each worker, per quarter.

(ii) In the event an employer also has failed to make, keep, and preserve the records containing payroll information and wages paid to each worker, estimated average wages for each worker for whom a payroll and wage record was not maintained will be determined as follows: The employer's total gross income for the audit period (earned, received, or anticipated) shall be reduced by thirty-five percent to arrive at "total estimated wages." Total estimated wages will then be divided by the number of employees for whom a record of actual hours worked was not made, kept, or preserved to arrive at an "estimated average wage" per worker. Estimated hours for each worker will then be computed by dividing the estimated average wage by the state's minimum wage in effect at the time the wages were paid or would have been paid as described in (d)(i) of this subsection.

(e) Reporting requirements and premium payments.

(i) Every employer who is awarded a forest, range, or timber land services contract must report the contract to the department promptly when it is awarded, and prior to any work being commenced, except as provided in (e)(iii) of this subsection. Employers reporting under the provisions of (e)(iii) of this subsection shall submit the informational report with their quarterly report of premium. The report shall include the following information:

(I) The employers' unified business identification account number (UBI).

(II) Identification of the landowner, firm, or primary contractor who awarded the contract, including the name, address, and phone number of a contact person.

(III) The total contract award.

(IV) Description of the forest, range, or timber land services work to be performed under terms of the contract.

(V) Physical location/site where the work will be performed including legal description.

(VI) Number of acres covered by the contract.

(VII) Dates during which the work will be performed.

(VIII) Estimated payroll and hours to be worked by employees in performance of the contract.

(ii) Upon completion of every contract issued by a landowner or firm that exceeds a total of ten thousand dollars, the contractor primarily responsible for the overall project shall submit in addition to the required informational report described in (e)(i) of this subsection, report the payroll and hours worked under the contract, and payment for required industrial insurance premiums. In the event that the contracted work is not completed within a calendar quarter, interim quarterly reports and premium payments are required for each contract for all work done during the calendar quarter. The first such report and payment is due at the end of the first calendar quarter in which the contract work is begun. Additional interim reports and payments will be submitted each quarter thereafter until the contract is completed. This will be consistent with the quarterly reporting cycle used by

other employers. Premiums for a calendar quarter, whether reported or not, shall become due and delinquent on the day immediately following the last day of the month following the calendar quarter.

(iii) A contractor may group contracts issued by a landowner, firm, or other contractor that total less than ten thousand dollars together and submit a combined quarterly report of hours, payroll, and the required premium payment in the same manner and periods as nonforestation, range, or timber land services employers.

(f) Out-of-state employers. Forest, range, or timber land services contractors domiciled outside of Washington state must report on a contract basis regardless of contract size for all forest, range, or timber land services work done in Washington state. Out-of-state employers will not be permitted to have an active Washington state industrial insurance account for reporting forest, range, or timber land services work in the absence of an active Washington forest, range, or timber land services contract.

(g) Work done by subcontract. Any firm primarily responsible for work to be performed under the terms of a forest, range, or timber land services contract, that subcontracts out any work under a forest, range, or timber land services contract must send written notification to the department prior to any work being done by the subcontractor. This notification must include the name, address, Social Security number, farm labor contractor number, (UBI) of each subcontractor, and the amount and description of contract work to be done by subcontract.

(h) Forest, range, or timber land services contract release - verification of hours, payroll, and premium. The department may verify reporting of contractors by way of an on-site visit to an employers' work site. This on-site visit may include close monitoring of employees and employee work hours. Upon receipt of a premium report for a finished contract, the department may conduct an audit of the firm's payroll, employment, and financial records to validate reporting. The department will notify the contractor, and the entity that awarded the contract, of the status of the contractors' account immediately after verification. The landowner, firm, or contractors' premium liability will not be released until the final report for the contract from the primary contractor and any subcontractors has been received and verified by the department.

(i) Premium liability - work done by contract. Washington law (RCW 51.12.070) places the responsibility for industrial insurance premium payments primarily and directly upon the person, firm, or corporation who lets a contract for all covered employment involved in the fulfillment of the contract terms. Any such person, firm, or corporation letting a contract is authorized to collect from the contractor the full amount payable in premiums. The contractor is in turn authorized to collect premiums from any subcontractor they may employ his or her proportionate amount of the premium payment.

To eliminate premium liability for work done by contract permitted by Title 51 RCW, any person, firm, or corporation who lets a contract for forest, range, or timber land services work must submit a copy of the contract they have let to the

department and verify that all premiums due under the contract have been paid.

Each contract submitted to the department must include within its body, or on a separate addendum, all of the following items:

- (I) The name of the contractor who has been engaged to perform the work;
- (II) The contractor's UBI number;
- (III) The contractor's farm labor contractor number;
- (IV) The total contract award;
- (V) The date the work is to be commenced; a description of the work to be performed including any pertinent acreage information;
- (VI) Location where the work is to be performed;
- (VII) A contact name and phone number of the person, firm, or corporation who let the contract;
- (VIII) The total estimated wages to be paid by the contractor and any subcontractors;
- (IX) The amount to be subcontracted out if such subcontracting is permitted under the terms of the contract;
- (X) The total estimated number of worker hours anticipated by the contractor and his/her subcontractors in the fulfillment of the contract terms;
- (j) Reports to be mailed to the department. All contracts, reports, and information required by this section are to be sent to:

The Department of Labor and Industries
Reforestation Team 8
P.O. Box 44168
Tumwater, Washington 98504-4168

(k) Rule applicability. If any portion of this section is declared invalid, only that portion is repealed. The balance of the section shall remain in effect.

(5) Logging and/or tree thinning—Mechanized operations—Industry rule. The following subsection shall apply to all employers assigned to report worker hours in risk classification 5005, WAC 296-17-66003.

(a) Every employer having operations subject to risk classification 5005 "logging and/or tree thinning - mechanized operations" shall have their operations surveyed by labor and industries insurance services staff prior to the assignment of risk classification 5005 to their account. Annual surveys may be required after the initial survey to retain the risk classification assignment.

(b) Every employer as a prerequisite of being assigned risk classification 5005 and having exposure (work hours) which is reportable under other risk classifications assigned to the employer shall be required to establish a separate subaccount for the purpose of reporting exposure (work hours) and paying premiums under this risk classification (5005). Except as otherwise provided for in this rule, only exposure (work hours) applicable to work covered by risk classification 5005 shall be reported in this subaccount. In the event that the employer's only other reportable exposure (work hours) is subject to one of the standard exception risk classifications, or the shop or yard risk classification then all exposure (work hours) will be reported under a single main account.

(c) Every employer assigned to report exposure (work hours) in risk classification 5005 shall supply an addendum report with their quarterly premium report which lists the name of each employee reported under this classification during the quarter, the Social Security number of such worker, the piece or pieces of equipment the employee operated during the quarter, the number of hours worked by the employee during the quarter, and the wages earned by the employee during the quarter.

(6) Special drywall industry rule.

(a) **Why have we changed the way you pay premiums?** Under Washington law (RCW 51.16.035), we are given the authority to establish how workers' compensation insurance rates are computed. For most industries, workers' compensation insurance rates are based on hours worked by employees. While the worker hour system works well for most industries, this method of paying premium can be unfair when a large segment of workers within an industry are not paid an hourly wage. The drywall industry is one in which many workers are paid on the basis of material installed, finished, stocked and/or scrapped (piece work), not the hours they work. To help remedy the problems caused by using work hours as the basis of how you pay premiums, and to provide greater fairness to employers engaged in drywall work, the premium for classifications 0524, 0526, 0527, 0528, 0529, 0530, 0531, 0532, 0533, and 0534 is based on material (square feet).

(b) **How can I qualify for a discounted rate?** For each drywall industry classification, we have established a second classification covering the same activity. The second classification carries a discounted rate. To qualify for a discounted classification and rate you are required to meet all of the following conditions:

(i) Prior to the end of the quarter that you want the discounted classifications and rates to be applied to your business, you must attend two workshops that we offer. For example, if you want the discounted classifications and rates to apply to your business for the third calendar quarter (July 1 through September 30), you must attend the two workshops by September 30. One workshop covers claims and risk management practices; the other workshop covers premium reporting and recordkeeping. The two workshops may be offered together or separately. Be sure to sign in so that you receive credit for attending the workshops.

(ii) You must provide us with a signed and completed voluntary release of information form that we will provide to you or your representative at the workshops. If we audit your account we will use this release form to obtain material and supply/purchase sales records from the material supply dealer(s) you use. This will aid us as we verify the information you supply us on your premium and supplemental reports. If we need to verify the information that you supplied us, we will send you written notice before we contact your material supply dealer(s). We must receive this release form prior to the end of the quarter in which you want the discounted classifications and rates to become effective. For example, if you want the discounted classifications and rates to apply to your business for the third calendar quarter (July 1 through September 30), we must receive your signed and completed release of information form by September 30. You

can complete the voluntary release form at the workshop and give it to our representative at the workshop or mail it to:

Labor and Industries
Employer Services - Drywall Manager
P.O. Box 44166
Olympia, Washington 98504-4166

(iii) You must submit complete and accurate premium reports when they are due and be current with all premium reports and payments. If you owe us money (premiums) for any quarter or period prior to December 31, 1996, we will allow you to report in the discounted classifications. To meet this condition you must file all reports required by this section when due; and if you have not paid premiums which were due for any quarterly report you submitted to us prior to and including the fourth quarter 1996 (October 1, through December 31, 1996), either pay the balance due immediately or maintain a current payment agreement with us for any past due premium. For purposes of this section, a "current payment agreement" is a written legal agreement which we have approved and entered into with you. This agreement will set forth your unpaid premium obligation, any applicable penalties and interest that must be paid, the amount of each installment (payment) and a schedule of payment due dates. If you fail to make any payment covered in a payment agreement you will lose the right to use the discounted classifications and rates. You will not be allowed to use a discounted classification or rate if you fail to submit reports, or make premium payments on time for any period beginning with the first quarter 1997. This requirement applies to any classification assigned to your business and for any exposure (hours, square feet, etc.) which occurs after January 1, 1997.

(iv) You must provide us with a supplemental quarterly report which shows by employee the employee's name and Social Security number, the wages you paid them during the quarter, the basis for how they are paid, (piece rate, commission, hourly, etc.) their rate of pay per unit/hour, and a notation as to whether they are an installer, finisher, scrapper, painter, etc. This report is to be attached to and submitted with your quarterly premium report.

(v) For any work which you subcontract to others, you must maintain the records described in WAC 296-17-31013.

(vi) You must keep and retain the payroll and employment records described in WAC 296-17-35201.

If you do not meet all of the above conditions, we will not assign the discounted rates to your business and you will be required to pay premiums in the nondiscounted classification(s).

(c) Can I be disqualified from using the discounted rates? Yes, as opposed to failing to qualify because you did not meet the conditions of (b) of this subsection, your business will be disqualified from using the discounted premium rates if:

- You do not file premium reports on time;
- You fail to pay premiums on time;
- You under report or misclassify the work performed by your employees;
- You fail to maintain the payments in a payment agreement you have entered into with us; or
- You fail to meet any other condition set forth in this rule.

(d) How long will I be disqualified from using the discounted classifications? If we disqualify your business from using the discounted classifications, the disqualification will be for three years (thirty-six months) from the period of last noncompliance.

(e) I have several businesses. If one of my businesses is disqualified from using the discounted rates will that affect my other businesses? Yes, if you have ownership interest in a business which has been disqualified from using the discounted rates, and you also have ownership interest in other construction businesses which have separate industrial insurance accounts or subaccounts, all businesses in which you have ownership interest will be disqualified from using the discounted rates. This includes a business which you own or owned that is in bankruptcy status and for which you have not entered into a payment agreement, if you owe us any money; or money that you owe us which we wrote off as an uncollectible debt.

(f) If I make a mistake in how I reported to you, should I correct the error? Yes, you should send in a revised report with an explanation of the error you are trying to correct. If we audit your business, and we determine that you have under reported exposure in any classification assigned to your business, all exposure which you reported in the discounted classifications for the audit period will be reclassified to the nondiscounted classifications.

(g) If I disagree with an audit or other decision can I still use the discounted rates while we are resolving the issue? Yes, if you are involved in a dispute with us over the status of an independent contractor, the issue being whether an individual is a covered worker; the proper classification of work your employees performed; or under reporting; you may qualify for the discounted classifications by paying the disputed amount while the issue is under dispute. In the event the issue is resolved in your favor we will refund any moneys which you paid which were disputed. We will not pay interest on the refunded amount. If you do not pay the audit balance or disputed amount when requested or do not post an equivalent bond, you will not be permitted to use any of the discounted classifications.

(h) I am the owner of the business, and I do some of the work myself. Can I deduct the work I do from the total square feet to be reported to you? Yes, as an owner of the business you can deduct the amount of work that you did from the total square feet which you are going to report to us.

(i) How do I calculate and report this deduction to you? To claim this deduction you must send us a report which shows by job, project, site or location the total amount of material that was installed or finished at that job, project, site or location; the amount of material which you, the owner, installed and/or finished at the job, project, site or location; the hours it took you to install and/or finish the material you are claiming deduction for; the total material installed and/or finished by employees at the job, project, site or location; and the hours the employees worked by job, project, site or location. This report must accompany the quarterly report in which you are claiming a deduction. If there are several owners, you must supply this information for each owner for whom you wish to claim a deduction.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-35203, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-35203, filed 8/28/98, effective 10/1/98.]

WAC 296-17-505 Classification 0105.

0105-13 Fence erection or repair: N.O.C.; parking meter installation; and placement of wire mesh on slopes for slope protection

Applies to contractors engaged in the erection and repair of all types of metal, wood, plastic, or vinyl fences not covered by another classification (N.O.C.). Work contemplated by this classification includes the use of a tractor with a propelled auger, or a mechanical or manual post hole digger. The poles or posts are set in the ground with small quantities of sand, gravel or concrete. Occasionally, a fence contractor may pour a concrete footing around the perimeter of the fence to be constructed. Work of this nature, when done in connection with a fence construction project, is included within the scope of this classification. This classification also includes the installation or removal of entire parking meter units, and the placement of wire mesh on slopes for slope protection.

This classification excludes contractors engaged in the erection or repair of brick, masonry or stone fences or planters which are to be reported separately in classification 0302; erection or repair of concrete fences or planters which are to be reported separately in classification 0217; and service or repair of parking meters which is to be reported separately in classification 0606.

Special note: It is common for contractors subject to this classification to sell kennel kits, fence repair parts and fencing materials. Sales of fencing materials by a fence contractor are included in classification 0105. Classifications 2009, 6309 or similar store classifications are not to be assigned to a contracting business.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-505, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-505, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-505, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.16.035, 87-24-060 (Order 87-26), § 296-17-505, filed 12/1/87, effective 1/1/88; 87-12-032 (Order 87-12), § 296-17-505, filed 5/29/87, effective 7/1/87; 86-12-041 (Order 86-18), § 296-17-505, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-505, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-505, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-505, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-505, filed 11/9/73, effective 1/1/74.]

WAC 296-17-50603 Classification 0112.

0112-00 Commercial production of sand, gravel, clay and stone products

Applies to establishments engaged in the production of sand, gravel, clay and stone products. Material may be excavated in an open or surface type pit at the production site, or from a mine or quarry operation. Sand, gravel and stone is washed, crushed, sorted, graded and screened. Sand or gravel in its natural state usually requires only screening with the larger stones being removed. The larger stones are crushed and rescreened. Clay is screened and graded. Refined products are stored in bins, hoppers, piles or yards prior to delivery by truck or rail to customers. This classification includes dealers who stockpile or store products in a yard type of environment prior to delivery to the customers when done in con-

nection with the production of such products. Equipment includes, but is not limited to, scrapers, shovels, front end loaders, trucks, conveyors, jaw crushers, gyrators, roll crushers, and shaking tables.

This classification excludes establishments engaged in selling custom soil mixes, bark, decorative rock, sand, or gravel purchased from others which are to be reported separately in classification 1103.

Special note: Classifications 0112 and 1103 are not to be assigned to the same business unless all the conditions of the general reporting rule covering the operation of a secondary business have been met.

0112-01 Humus or peat digging

Applies to establishments engaged in the digging or stripping of humus or peat. Humus is a brown or black organic substance consisting of decayed vegetable matter that provides nutrients for plants and increases the water retention of soil. Peat is a partially carbonized vegetable matter found in bogs and used as fertilizer and fuel. Work contemplated by this classification involves stripping material from the surface or bogs with mechanical equipment such as, but not limited to, power shovels, scrapers, drag lines, clamshell diggers or cranes, and hydraulic dredges. The material is conveyed from the pit or bog to hoppers by trucks or belt conveyors. At times it is necessary to grade, screen and dry the material prior to storage or delivery to customers. This classification includes dealers who stockpile or store material in a yard type of environment prior to delivery to customers when done in connection with the digging or stripping of such products.

Special note: Classifications 0112 and 1103 are not to be assigned to the same business unless all of the conditions of the general reporting rule covering the operation of a secondary business have been met.

0112-02 Pit, crusher and bunker operations in connection with road, street and highway construction

Applies to establishments engaged in pit, crusher and bunker operations in connection with highway, street or roadway construction projects. Generally, this type of operation is located in close proximity to the project site and is only set up for the duration of the project. Work contemplated by this classification includes excavating open or surface pits, scraping or stripping the surface, crushing, and bunker (storage) of material. Products extracted from the pit or surface include boulders, stone, rock, gravel, aggregate, sand, dirt or clay. These products can be used directly without any further refinements or could be washed, sorted, crushed and/or screened. Products are stored in bunkers or piles until needed. These products are used in a variety of ways as part of the roadway project such as, but not limited to, making preliminary roads into an area, filling in low or uneven areas, use as natural barriers, and bringing the roadbed and surrounding areas to grade. Equipment includes, but is not limited to, power shovels, scrapers, bulldozers, front end loaders and other earth moving equipment, trucks, conveyors, jaw crushers, gyrators, roll crushers, shaking tables, etc.

Special note: This classification excludes contractors that maintain a temporary pit, crusher or bunker operation when performed by a contractor engaged in additional phases

of the same road, street or highway construction project which is to be reported separately in classification 0101.

0112-03 Sand, gravel, or shale: Digging, N.O.C.

Applies to establishments engaged in the digging or dredging of sand, gravel or shale that is not covered by another classification (N.O.C.). The material is excavated from surface pits with mechanical equipment such as power shovels, drag lines, clamshell diggers or cranes, or obtained from nonnavigable waters by means of hydraulic dredges, clamshell dredges, etc. The material is conveyed from the bank, pit or dredge to hoppers by trucks, belt conveyors, narrow gauge railroads or pipelines. It is then washed, graded, screened and stored in bins, hoppers, or piles prior to delivery by truck or rail to customers. Sand or gravel in its natural state usually requires only screening with the larger stones being removed. In some instances, the larger stones may be crushed and rescreened which is included in this classification. This classification includes dealers who stockpile or store material in a yard type of environment prior to delivery to customers when done in connection with the digging or stripping of such products.

This classification excludes underground mining operations which are to be reported separately in classification 1702.

Special note: Classifications 0112 and 1103 are not to be assigned to the same account unless all the conditions of the general reporting rule covering the operation of a secondary business have been met.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-50603, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-50603, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-50603, filed 5/31/96, effective 7/1/96.]

WAC 296-17-50910 Classification 0212.

0212-00 Asphalt paving or surfacing, N.O.C.

Applies to contractors engaged in asphalt paving or surfacing not in connection with highway, street, or roadway projects not covered by another classification (N.O.C.). This classification covers all forms of asphalt paving or surfacing, resurfacing, scraping, sawing, cutting or patching operations not in connection with highway, street, or roadway projects such as, but not limited to, parking lots, airport runways and landing strips, driveways, walking paths, bicycle trails, tennis courts, playgrounds, and golf cart paths. The process begins after the land grade has already been established and the sub-surface or sub base has been prepared. Work contemplated by this classification includes the laying of crushed stone, placement of expansion joints, application of oil or other adhesive bonding materials, and the surface spreading and rolling of crushed aggregate. Equipment used by a contractor subject to this classification includes, but is not limited to, scrapers, graders, rollers, paving machinery, oil trucks and dump trucks. This classification also applies to the application of various types of cushion surfaces for playgrounds.

This classification excludes the preliminary clearing of land, establishing grades, subsurfaces or sub bases which are to be reported separately in classification 0101; asphalt surfacing/resurfacing in connection with highway, street, or roadway projects which is to be reported separately in classification 0210; application of asphalt sealant to roadways and

parking lots which is to be reported separately in classification 0219; application of asphalt sealant to driveways which is to be reported separately in classification 0504-06; construction specialty services such as the installation of guardrails, lighting standards and striping which are to be reported separately in classification 0219; and concrete construction which is to be reported separately in the classification applicable to the work being performed.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-50910, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-50910, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-50910, filed 5/31/96, effective 7/1/96.]

WAC 296-17-50917 Classification 0219.

0219-00 Construction specialty services, N.O.C.

Applies to contractors engaged in the installation or removal of highway, street, or roadway lighting, signs, guardrails, roadside reflectors, lane buttons or turtles, or lane markers not covered by another classification (N.O.C.). Usually, these activities occur as finishing touches after new or existing roadways are paved or surfaced. Roadway lighting includes traffic signal lights, and halogen or mercury vapor lights mounted to metal standards erected alongside the roadway. Signs (such as speed limit, road condition, city and town mile destination) are mounted on overpasses or on wood or metal poles erected alongside the roadway. Guardrails include metal barriers mounted on wood or metal poles driven into the roadside shoulder. Lane markers, lane buttons or turtles consist of small reflectors, or chips of plastic or concrete attached to the road with an adhesive bonding material. This classification includes the related hook-up of power to the light standard.

This classification excludes the installation of power lines that feed into power poles which is to be reported separately in the applicable construction classification for the work being performed.

Special note: This classification excludes exterior sign erection, repair, or removal not in connection with displaying highway, street, or roadway information or conditions even though such signs may be erected or placed alongside roadways (such as advertisement bill boards, business, or personal property signs) which is to be reported separately in classification 0403.

0219-01 Construction specialty services

Applies to contractors engaged in specialty services such as the painting or striping of highways, streets, roadways, or parking lots not covered by another classification (N.O.C.). This classification includes painting, striping, numbering, or lettering highways, streets, roadways, parking lots, parking garages, airport runways, taxi ways, curbs, roadway dividers or median strips, and special traffic areas such as fire, bus, handicap, and no parking zones. The paint or other material used for these markings is usually applied to the surface using a mechanical device, either self-propelled or towed by a truck or other motor vehicle. In some instances, the paint will be applied manually with brush or roller which is included in this classification. This classification includes the application of asphalt sealants to roadways or parking lots. This classification also includes concrete barrier installation, in connection with road construction, by a concrete barrier

rental business or by a flagging contractor who also supplies the concrete barriers. This includes the flaggers who are necessary during the installation of the barriers as well as any flaggers the company supplies to the road construction project itself.

This classification excludes the interior painting of buildings which is to be reported separately in classification 0521, the exterior painting of buildings or structures which is to be reported separately in classification 0504; application of asphalt sealant to driveways which is to be reported separately in classification 0504-06; the rental of the concrete barriers and other flagging equipment which is to be reported separately in classification 6409; and flaggers who are not employed by a concrete barrier rental business or by a flagging contractor who also supplies the concrete barriers which are to be reported separately in classification 7116 or 7118 as appropriate.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-50917, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-50917, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-50917, filed 5/31/96, effective 7/1/96.]

WAC 296-17-519 Classification 0504.

0504-06 Waterproofing, N.O.C.: Buildings or structures

Applies to contractors engaged in waterproofing buildings or structures not covered by another classification (N.O.C.). This classification includes the application and repair services of waterproofing material to all types of buildings or structures, regardless of height, including, but not limited to, foundations and foundation walls, floors, decks, fences, walkways and driveways. Waterproof material is applied to a variety of surfaces such as wood, concrete, asphalt, steel, metal, plaster, or stone. There are several types of waterproof processes: Membrane, which adheres long strips of rubber and pumice to exterior walls or foundations with the use of primer; pressure injection, which uses a long wand inserted into the ground to fill cracks; epoxy injection, which is performed on the interior or exterior with use of a caulk gun to inject a silicon material into cracks; or application with use of a brush, roller or spray directly onto the surface. This classification includes the application of asphalt sealant to driveways.

This classification excludes excavation work performed in conjunction with a waterproofing contract which is to be reported separately in classification 0101; waterproofing operations performed in connection with roofing or subaqueous work which is to be reported separately in the classification applicable to the work being performed; the application of asphalt sealant or waterproof materials to roadways and parking lots which is to be reported separately in classification 0219; and the application of waterproof materials performed by a concrete contractor as part of the concrete construction project which is to be reported separately in the classification applicable to the work being performed.

Special note: Classification 0101 applies when excavation work is performed (to remove dirt away from a foundation wall or to push it against the wall after the waterproofing material is applied) regardless of the type of contractor performing the excavation work.

0504-18 Pressure washing services or sandblasting, N.O.C.: Buildings or structures

Applies to contractors engaged in pressure washing or sandblasting buildings or structures, not covered by another classification (N.O.C.). This classification includes cleaning, washing, pressure washing or sandblasting buildings or structures. These services are performed to remove dirt, moss, rust or old paint from buildings or structures. Pressure washing involves a forced spray of air and water to remove unwanted surface materials, whereas, sandblasting, or abrasive blasting, involves a forced spray of sand, steel, or glass. This classification includes the cleaning of roofs, gutters, and downspouts, the removal of moss or snow from multiple story buildings, and the cleaning of ceiling tiles. Pressure washing and sandblasting systems include portable blast and pressure cleaning machines, hand-operated, cabinet-type sandblasting or pressure washing machines, automatic blast or pressure cleaning machines and wet-blast cleaning machines.

This classification excludes contractors engaged in multimedia blasting in shop which is to be reported separately in classification 3402; pressure washing or sandblasting by a painting contractor as a part of the preparation for painting exterior buildings, structures, or the interior/exterior of tanks which is to be reported separately in the classification 0504-21; pressure washing as a part of interior building painting contracts which is to be reported separately in classification 0521; cleaning or washing roofs, or removing snow from, single story buildings (provided the cleaning or washing is not part of a painting or roofing contract) which is to be reported separately in classification 6602; waterproofing buildings or structures, N.O.C. which is to be reported separately in classification 0504-06; and pressure washing or sandblasting operations performed in conjunction with and as a part of another type of business such as a foundry, metal goods manufacturer, auto body repair shop, etc., which is to be reported separately in the applicable classification.

0504-20 Lead abatement

Applies to contractors engaged in lead abatement which is performed on structures where there are significant amounts of lead-based paint and lead dust. Contractors must comply with various governmental regulations. The first step in all lead abatement projects is the preliminary testing of the site to determine the presence of lead and the extent of the contamination. If the ground surrounding the proposed worksite is contaminated, it will require remediation, which is done by a soil remediation contractor who is to be reported separately in the appropriate classification. The next step is deciding which abatement procedure is right for the project such as: Encapsulation which is used on interior surfaces to seal the lead-based paint with a bonding material; enclosure which is used on interior and exterior surfaces and involves constructing special airtight enclosures made out of gypsum wallboard, plywood paneling, aluminum, vinyl or wood exterior sidings; component replacement which involves removing building components such as paneling, moldings, windows and doors which are coated with lead-based paint and replacing them with new components; and chemical removal, abrasive removal or handscraping which are methods to

physically remove the lead paint. This classification includes all preparation work and all cleanup work.

This classification excludes soil remediation work which is to be reported separately in classification 0101; asbestos abatement which is to be reported separately in classification 0512; and lead abatement as part of a painting contract for interior/exterior of buildings or structures, or the interior/exterior of tanks which is to be reported separately in the applicable classification.

0504-21 Painting: Exterior buildings or structures, N.O.C.; Cleaning: Interior/exterior of oil or gas storage tanks, beer vats, and sewage treatment tanks

Applies to contractors engaged in painting the exterior of all types of buildings or structures not covered by another classification (N.O.C.), regardless of height. Buildings and structures include, but are not limited to, bridges, towers, smokestacks, stadiums, factories, warehouses, stores, churches, and residential or commercial single or multiple story buildings. Paint is applied by brush, roller or spray to a variety of surfaces such as wood, concrete, steel, metal, plaster, stone, or other types of exterior surfaces. This classification includes all preparation work such as the set up of scaffolding or power lifts, pressure washing, removal of old paint or asbestos, sandblasting, taping or masking, and cleanup work. This classification also applies to cleaning, coating, or painting the interior/exterior of oil or gas storage tanks, beer vats, or sewage treatment tanks.

This classification excludes contractors engaged in waterproofing buildings or structures, N.O.C. which are to be reported separately in classification 0504-06; pressure washing services or sandblasting of buildings or structures which are to be reported separately in classification 0504-18; interior painting of buildings which is to be reported separately in classification 0521; painting of murals or other artwork on the interior of buildings which is to be reported separately in classification 4109; and painting of murals or other artwork on the exterior of buildings which is to be reported separately in classification 0403.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-519, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-519, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-519, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 94-12-063, § 296-17-519, filed 5/30/94, effective 6/30/94; 90-13-018, § 296-17-519, filed 6/8/90, effective 7/9/90; 89-24-051 (Order 89-22), § 296-17-519, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-519, filed 5/31/88, effective 7/1/88; 85-24-032 (Order 85-33), § 296-17-519, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-519, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-519, filed 11/29/82, effective 1/1/83; Order 76-36, § 296-17-519, filed 11/30/76; Order 73-22, § 296-17-519, filed 11/9/73, effective 1/1/74.]

WAC 296-17-52102 Classification 0510.

0510-00 Wood frame building: Construction or alterations, N.O.C.

Applies to contractors engaged in wood frame building construction or alterations not covered by another classification (N.O.C.). For the purposes of this classification, wood frame building construction means buildings erected exclusively of wood or wood products. This classification includes all building framing activities done in connection

with wood frame building construction including the placement of roof trusses, sheathing roofs, installation of exterior building siding, and the installation of exterior doors and door frames.

This classification excludes all other phases of wood frame building construction not listed as part of the framing activities above such as, but not limited to, site preparation and excavation (0101); overhead or underground utilities, asphalt work, or concrete work which is to be reported separately in the applicable classification; new landscape work (0301); brick work (0302); stucco work (0303); plumbing work (0306); HVAC work (0307); carpet and tile work (0502); exterior painting (0504); roof work (0507); insulation work (0512); interior finish carpentry - interior doors, cabinets, fixtures or molding (0513); installation of garage doors (0514); installation of sheet metal siding, gutters, and non-structural sheet metal patio covers/carports (0519); interior painting (0521); electrical work (0601) or wallboard installation, taping or texturing which are to be reported separately in the applicable classifications. For a more thorough description of the activities included and excluded from wood frame building construction, review the Construction Industry Guide.

Special note: Classification 0510 also includes wood frame building alterations or remodel work when the activity involves building new additions. The term "new additions" is defined as adding on to an existing wood frame building (upwards or outwards) in which the use of structural supports and main bearing beams is required. This is distinguishable from classification 0516 - building repair or carpentry work that typically does not require the placement of structural supports or main bearing beams. The purpose of classification 0516 is to build or rebuild with nonstructural or bearing beams, or to replace an existing portion (including existing structural and bearing beams) of a wood frame building for appearances or as a result of deterioration to make it appear new again. Care should be exercised as the terminology to build, rebuild, remodel, construct or reconstruct is irrelevant to assignment of classification which should recognize what the project actually involves.

Guidelines:

Constructing a new wood frame building that never existed -0510

Altering all or part of an existing wood frame building by adding on new additions - 0510

Remodeling all or part of an existing wood frame building *without* adding on new additions - 0516

Installation of wood or vinyl siding on a new or existing wood frame building - 0510

Constructing a new wood garage that never existed - 0510

Altering all or part of an existing wood garage by adding on new additions - 0510

Remodeling all or part of an existing wood garage *without* adding on new additions - 0516

Constructing a new wood carport or wood shed that never existed - 0510

Rebuilding an existing wood carport or wood shed (all or part) with or without new additions - 0516

Construction of a new wood deck by the framing contractor when a new wood house is being built - 0510

Constructing or replacing a wood deck on an existing wood house - 0516

Constructing or replacing a wood deck for any type of nonwood building - 0516

Altering the existing interior of a wood frame building by adding exterior additions - 0510

Remodeling the existing interior of a wood frame building without adding exterior additions - 0516

Constructing, altering, or remodeling the interiors of nonwood frame buildings - 0516

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-52102, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52102, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-52102, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-52102, filed 5/31/88, effective 7/1/88; 87-12-032 (Order 87-12), § 296-17-52102, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-52102, filed 11/27/85, effective 1/1/86.]

WAC 296-17-52106 Classification 0514.

0514-00 Garage or overhead door: Installation, service or repair

Applies to contractors engaged in the installation, service or repair of garage or overhead doors made of wood, metal, or aluminum. As part of a new construction project, the installation usually occurs before the building or structure is painted. Garage or overhead door installation can also occur as a replacement to an existing door or as an alteration or addition to a building or structure. The process involves installing door tracks on both sides of the doorway, inserting the door, which usually consists of panels or sections, into the tracks, and attaching panels or sections to one another. This classification also includes the installation of automatic door openers when performed as a part of the garage or overhead door installation contract, and by the same contractor installing the doors.

This classification excludes the installation of automatic door openers when it is not performed as a part of the garage or overhead door installation contract and by the same installation contractor which is to be reported separately in classification 0603, as is all service or repair for automatic door openers; the installation of exterior glass doors and door frames such as nonautomatic and automatic opening doors at retail establishments or commercial buildings which are to be reported separately in classification 0511; the installation of interior or exterior doors and door frames when performed by a framing contractor as part of framing a wood frame building which is to be reported separately in classification 0510; the installation of interior doors and door frames which is to be reported separately in classification 0513; the installation of wood, fiberglass or metal exterior doors as part of a nonwood frame building when performed by employees of the general contractor which is to be reported separately in classification 0518; and the repair or replacement of wood, fiberglass or metal doors on an existing building which is to be reported separately in classification 0516.

0514-01 Nonstructural additions to buildings or structures: Installation, removal, alteration, and/or repair

Applies to contractors engaged in the installation, removal, alteration, and/or repair of nonstructural additions to buildings or structures. Nonstructural iron, steel, brass or bronze additions include, but are not limited to, fire escapes, staircases, balconies, railings, window or door lintels, protective window or door gratings, bank cages, decorative elevator entrances or doors, permanent stadium seating, and wall facades and facings. Shutters and similar decorative add-ons may be made of wood, vinyl or plastic. Generally, the process involves bolting, screwing, riveting, or welding these additions to the interior or exterior of buildings or structures. Contractors who operate a shop to prefabricate the additions are to be assigned the classification applicable for the shop manufacturing work being performed. When a contractor's business is assigned a manufacturing classification for shop operations, classification 5206, "Permanent yard or shop," is no longer applicable to the contractor's business for the storage of materials or repair of equipment.

This classification excludes sheet metal installation such as siding, gutters and downspouts, and nonstructural sheet metal patio covers/carports which are to be reported separately in classification 0519; the installation, repair or dismantling of portable bleachers or stages which is to be reported separately in classification 0603; and the erection of commercial metal carports, service station canopies, and structural iron or steel work as part of a building or structure which is to be reported separately in classification 0518.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-52106, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52106, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 89-24-051 (Order 89-22), § 296-17-52106, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-52106, filed 5/31/88, effective 7/1/88.]

WAC 296-17-52108 Classification 0516.

0516-00 Building repair and carpentry, N.O.C.

Applies to contractors engaged in building repair and carpentry work, not covered by another classification (N.O.C.). This classification applies to carpentry-related framing work on concrete, brick and steel buildings, and to wood framed building renovation and remodeling projects where the structure is not being modified or altered. Typical projects include, but are not limited to: Converting a room from one use to another, such as a bedroom to a study, or a garage to a family room; enlarging or changing the configuration of a room by removing or adding an interior wall; upgrading a kitchen or bathroom; or adding structures such as a wooden deck to an existing building, screening a porch, installing a wood patio cover, or assembling sheet metal tool or garden sheds. Contractors subject to this classification use a variety of dimensional lumber and wood products as well as metal fasteners (nails, screws and bolts), and metal reinforcing or support straps such as joist hangers and post brackets. Technological changes have produced new materials which are replacing wood and wood products. These materials include, but are not limited to, light weight metal studs and plastic and fiber reinforced boards. This classification includes the framing of private residences with light weight

metal studs and the installation of earthquake tie downs on residential buildings. This classification also includes specialty service providers or contractors engaged in providing general repair services (handyman) on buildings and dwellings. Classification 0516-00 can be used for these businesses to simplify recordkeeping and reporting if they provide general carpentry work and at least two of the following types of repairwork; electrical, plumbing, cabinet, interior alteration, painting, drywall, masonry, carpet/linoleum/laminate, glazing, or appliance repair.

This classification excludes roofing or roof work which is to be reported separately in classification 0507.

0516-01 Wood playground equipment: Installation and/or repair

Applies to contractors engaged in the installation and/or repair of wood playground equipment. Work contemplated by this classification begins after the area of land has been excavated and/or cleared and includes installing wood playground equipment at private residences and in public settings such as, but not limited to, schools, parks, daycare centers, churches, and hotels. This classification usually includes a variety of playground equipment comprised of treated wood beams, poles, posts, and a variety of dimensional lumber used in building swings, forts, stationary and swinging bridges, balance beams, climbing towers, slides, and rope and tire walks. Generally, the process involves setting poles or posts with use of a post hole digger, backhoe or tractor equipped with an auger. The poles or posts may be set in concrete. Depending on the piece of equipment being built, use of beams, planks, dimensional lumber, rope, chains, tires, and metal bars or rings, are securely attached with nails, screws, bolts or eye hooks. This classification includes the building of borders surrounding the playground equipment area with beams or railroad ties and the spreading of pea gravel, sand or wood chips underneath the equipment.

This classification excludes the installation of metal playground equipment which is to be reported separately in classification 0603, and the excavation or clearing of land which is to be reported separately in classification 0101.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-52108, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52108, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-52108, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-52108, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-52108, filed 5/31/88, effective 7/1/88.]

WAC 296-17-52109 Classification 0517.

0517-00 Factory built housing units: Set up by contractor or by employees of the manufacturer

Applies to the set up of factory built housing units such as mobile/manufactured homes, modular homes, or prefab cedar homes by contractors who work independently from a sales dealership or by employees of the manufacturer. This classification includes delivery of the factory built unit when performed by the set up contractor. The set up process includes placement of the unit or unit sections on blocks or foundations; joining the interior and exterior sections which may involve incidental placement of ridge cap, siding, trim

boards, moldings, and interior seams; plumbing and electrical connections; and the installation of skirting, awnings or decks.

This classification excludes mobile home or factory built housing sales dealerships who set up and/or deliver the unit to a sales location or customer's site which are to be reported separately in classification 3415; the delivery of a mobile home or other factory built housing unit by a trucking service which is to be reported separately in classification 1102; the pouring of foundations; and/or the construction of nonstructural sheet metal patio covers/carports, garages or storage sheds regardless if performed by employees of the set up contractor or by another contractor which is to be reported separately in the applicable classification.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-52109, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52109, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 89-24-051 (Order 89-22), § 296-17-52109, filed 12/1/89, effective 1/1/90.]

WAC 296-17-52110 Classification 0518.

0518-00 Building construction, N.O.C.: Alterations and concrete construction, N.O.C.

Applies to contractors engaged in building construction, not covered by another classification (N.O.C.), including alterations. Work contemplated by this classification includes nonwood frame buildings and structures such as, but not limited to, waste treatment and waste disposal plants, fish hatcheries and stadiums in which the superstructure, skeleton framework, or building shell consists of concrete, iron or steel, or a combination of concrete, iron, steel and/or wood. This classification makes no distinction to the size of the structure or number of stories within the building and includes all concrete tilt-up buildings. Activities include, but are not limited to, the set up and tear down of forms, placement of reinforcing steel, rebar, or wire mesh, pouring and finishing concrete within the building or structure such as foundations, monolithic slabs, ground supported floor pads, precast or poured in place bearing floors or wall panels, columns, pillars, balconies, stairways, including the raising and/or standing of concrete tilt-up walls or precast floors and wall portions, and raising and securing metal frames or members into place using a crane or boom and securing by bolt, rivet or weld.

This classification excludes all other phases of construction which are not in connection with building the superstructure, skeleton framework, or building shell such as, but not limited to, site preparation and excavation which is to be reported separately in classification 0101; bridge or tunnel construction which is to be reported separately in classification 0201; pile driving which is to be reported separately in classification 0202; underground utilities and systems which is to be reported separately in the classification applicable to the work being performed; asphalt work which is to be reported separately in the classification applicable to the work being performed; concrete paving or flatwork not contained within the building which is to be reported separately in the classification applicable to the work being performed; new landscape construction which is to be reported separately in classification 0301; brick, block, granite, marble, slate or masonry work which is to be reported separately in

classification 0302; plastering, stuccoing and lathing work which is to be reported separately in classification 0303; plumbing work which is to be reported separately in classification 0306; HVAC work which is to be reported separately in classification 0307; carpet and tile work which is to be reported separately in classification 0502; exterior painting which is to be reported separately in classification 0504; roof work which is to be reported separately in classification 0507; installation of glass panels, curtain walls or windows which is to be reported separately in classification 0511; installation of insulation, sound proofing or suspended acoustical ceilings which is to be reported separately in classification 0512; interior finish carpentry such as the installation of interior doors, cabinets, fixtures or molding which is to be reported separately in classification 0513; installation of overhead doors, garage doors which is to be reported separately in classification 0514; installation of exterior doors and door frames, interior framing and carpentry work which is to be reported separately in classification 0516; installation of sheet metal siding or gutter work which is to be reported separately in classification 0519; interior building painting which is to be reported separately in classification 0521; electrical work which is to be reported separately in classification 0601; the installation of elevators and elevator door bucks which is to be reported separately in classification 0602; new dam construction projects which are to be reported separately in classification 0701; wood frame buildings which are to be reported separately in classification 0510; sheet metal tool sheds which are to be reported separately in classification 0516; brick or block buildings which are to be reported separately in classification 0302 and wallboard installation, taping or texturing which are to be reported separately in the applicable classifications.

0518-01 Metal carport: Erection

Applies to contractors engaged in the erection of metal carports such as those used for commercial parking lots. This classification includes raising and securing metal frames, members, or I-beams into place with a boom or crane and securing by bolt, rivet or weld.

This classification excludes the erection of nonstructural sheet metal patio cover/carports which is to be reported separately in classification 0519, and the erection of a wood carport which is to be reported separately in the applicable carpentry classification (see classification 0510 for additional information).

0518-02 Metal service station canopy: Erection

Applies to contractors engaged in the erection of metal service station canopies. Work contemplated by this classification includes, but is not limited to, raising and securing metal frames, members, or I-beams into place with a boom or crane and securing by bolt, rivet or weld.

This classification excludes the removal or installation of underground tanks which is to be reported separately in classification 0108, and the removal or installation of service station pumps which is to be reported separately in classification 0603.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-52110, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52110, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-52110, filed 5/31/96, effective 7/1/96.]

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Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-52110, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-52110, filed 12/1/89, effective 1/1/90.]

WAC 296-17-52111 Classification 0519.

0519-00 Building construction sheet metal work, N.O.C.

Applies to contractors engaged in the installation or repair of sheet metal work in building construction, not covered by another classification (N.O.C.). Work contemplated by this classification applies to interior and exterior sheet metal work for residential or commercial buildings and includes wood frame, pole buildings, and nonwood frame buildings. This classification includes the installation of metal siding, gutters and downspouts, nonstructural sheet metal patio covers/carports, metal industrial shelving, stainless steel counter tops, and interior wall panels (such as the back splash behind stoves or sinks). Contractors who operate a sheet metal fabrication shop or prefabricate the gutters, downspouts and posts in a shop away from the construction site are to be assigned classification 3404 for the shop operations. When a contractor's business is assigned classification 3404 for shop operations then classification 5206 "Permanent yard or shop" is no longer applicable to the contractor's business for the storage of materials or repair to equipment.

This classification excludes sheet metal work as part of heating ventilation and air conditioning systems installation which is to be reported separately in classification 0307; the installation of aluminum or sheet metal as part of roof work which is to be reported separately in classification 0507; the installation of light weight sheet metal tool sheds which is to be reported separately in classification 0516; and the installation of commercial metal carports and service station canopies which is to be reported separately in classification 0518.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-52111, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52111, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 89-24-051 (Order 89-22), § 296-17-52111, filed 12/1/89, effective 1/1/90.]

WAC 296-17-52113 Classification 0521.

0521-00 Painting building interiors; wallpaper hanging/removal

Applies to contractors engaged in painting building interiors regardless of the height inside the building. This classification includes building interiors such as, but not limited to, single and multiple story residential houses and commercial buildings, warehouses, factories, coliseums, theaters, stores and churches. The following structures are examples which would *not meet* the definition of a building or qualify as interior painting: Bridges, refineries, grain silos, water towers, service station canopies, or tanks. Paint is applied by brush, roller or spray to a variety of surfaces such as wood, wallboard, plaster, stucco, metal, concrete, or other types of surfaces found within the interior of a building. This classification includes all preparation work such as the set up of scaffolding, sanding, removal of old paint or asbestos, taping or masking, and clean up work. This classification also includes the hanging or removal of wallpaper. The process of hanging wallpaper includes cleaning or scraping walls to ensure the wallpaper will adhere to the surface. Depending on the type

of wallpaper, adhesive is applied to the wall surface, the wallpaper, or both. Patterns are matched and the strip is applied to the surface and brushed smooth to remove the air pockets. This process is repeated until the entire job is complete. This classification also includes refinishing or resurfacing of tubs, sinks, appliances and countertops.

This classification excludes exterior painting of buildings or structures which is to be reported separately in classification 0504. Classifications 0521 and 0504 may be assigned to the same employer provided accurate records are maintained which distinguish interior building painting contracts from exterior building or structure painting contracts. This classification also excludes contractors engaged in waterproofing buildings or structures N.O.C., pressure washing services or sandblasting of buildings or structures, lead paint abatement, and the exterior painting of buildings or structures, including interior/exterior tanks which are all to be reported separately in classification 0504; painting of murals or other artwork on the interior of buildings which is to be reported separately in classification 4109; and painting of murals or other artwork on the exterior of buildings which is to be reported separately in classification 0403.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-52113, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-52113, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-52113, filed 5/31/96, effective 7/1/96.]

WAC 296-17-532 Classification 0901.

0901-00 Ship building and/or repair, N.O.C. (to be assigned only by the maritime underwriter)

Applies to establishments engaged in the building and/or repair of ships not covered by another classification (N.O.C.) and to the dismantling of hulls. Ships contemplated by this classification are recreational vessels under sixty-five feet and some commercial vessels such as, but not limited to, military vessels, tugs, scows, and barges. This classification may also include vessels over sixty-five feet that do not meet the situs and status provisions of the United States Longshore and Harbor Workers Compensation Act. This classification includes shop operations.

This classification excludes wood boat building and repair which is to be reported separately in classification 2903; sheet aluminum boat building which is to be reported separately in classification 3404; fiberglass boat building which is to be reported separately in classification 3511; plate aluminum boat building which is to be reported separately in classification 5209; and boat dealers, marinas, and boat house operations including repair centers which are to be reported separately in classification 3414.

Special note: This classification is seldom assigned as most work would be covered by LHWCA. Commercial vessels included in this classification are required to have a Small Vessel Exception Certificate issued by the U.S. Department of Labor.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-532, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-532, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 90-13-018, § 296-17-532, filed 6/8/90, effective 7/9/90; 89-24-051 (Order 89-22), § 296-17-532, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035, 85-24-032 (Order 85-33), § 296-17-532, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-532, filed 2/28/85, effective

4/1/85; 83-24-017 (Order 83-36), § 296-17-532, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-532, filed 11/9/73, effective 1/1/74.]

WAC 296-17-53802 Classification 1105.

1105-00 Septic tank pumping

Applies to establishments engaged in septic tank pumping services. Operations contemplated by this classification include driving, locating the septic tank and digging as necessary to uncover it, connecting the pumping hose to the septic tank, pumping out the sludge, and disposing of the waste products.

This classification excludes installation and repair of septic tanks or systems which are to be reported separately in classification 0108, and cleaning of sewage treatment tanks which is to be reported separately in classification 0504.

1105-01 Street sweeping; parking lot sweeping; and portable chemical toilet servicing

Applies to establishments that perform street sweeping and parking lot sweeping services for others. Trucks used for sweeping are equipped with rotating or nonrotating brushes and vacuum/suction devices. In addition to driving duties, the drivers may adjust/unclog the brushes, and clean the holding tanks contained on the sweeping or pumping vehicle. This classification also includes snow removal by plowing, delivery of portable toilets and the related servicing and disposal of waste products which are recovered by establishments subject to this classification.

1105-02 Vacuum truck services

Applies to establishments engaged in vacuum truck services for others. Services include, but are not limited to, cleaning of duct work, picking up waste oils, lubricants, anti-freeze, bilge water, and similar waste products. Establishments subject to this classification may offer a regular service, one-time or occasional pick-up service. The driver has kits for testing the materials and, if there is a question, a sample is taken to a laboratory for further analysis. If the waste material is acceptable, it is pumped into the tanker truck. The waste material may be consolidated with similar products and "bulked" in storage tanks, then taken to appropriate treatment or disposal facilities, or it may be taken directly to appropriate facilities. If it is to be "bulked" with other products, it will be filtered as it is pumped into the storage tanks and allowed to sit for a few days for any water to settle to the bottom of the tank and be drained off. Bulk materials may be hauled away by the establishment's own trucks or by common carrier. Establishments subject to this classification may pick up containers of used oil filters and bring them into their plant where they are sorted into crushed and uncrushed filters, and gaskets removed. This activity is included within the scope of this classification if it is an incidental service. This classification includes the related disposal of waste products which are recovered by establishments subject to this classification.

This classification excludes septic tank pumping which is to be reported separately in classification 1105-00.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-53802, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-53802, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-53802, filed 5/31/96, effective 7/1/96.]

WAC 296-17-53805 Classification 1108.**1108-02 Glass tempering**

Applies to establishments engaged in glass tempering services for others. Operations contemplated by this classification include glass cutting, bending, grinding, beveling, and silvering. Tools and equipment include metal and wood cutting tools and machinery, grinders, sanders, drills, saws, knives, suction cups, putty, caulking, cleaning solvents, forklifts, packing materials, delivery and service vehicles and tempering ovens. The process of glass tempering consists of taking auto or sheet glass which has been purchased from a glass manufacturer or distributor and placing it in a tempering oven. The oven heat realigns the molecular structure of the glass creating added strength, however, the appearance of the glass remains unchanged. This classification includes the sale of accessories for flat glass such as sealants, screening, aluminum frames for storm windows and doors, mirror backings, frames and glass cleaners.

This classification excludes establishments engaged in the installation of glass, mirrors, aluminum or wood window sashes or similar products away from the shop which are to be reported separately in classification 0511; establishments engaged in the manufacture of glass which is to be reported separately in classification 3503; merchants who specialize in selling or installing auto glass which is to be reported separately in classification 1108-04; glass merchants engaged exclusively in flat glass sales which are to be reported separately in classification 1108-03; and combined auto/flat glass merchants with no tempering which are to be reported separately in classification 1108-05.

1108-03 Flat glass merchants - no tempering

Applies to establishments engaged in receiving, storing and selling all types of fabricated glass and plexiglas. Glass products include, but are not limited to, window glass, plate glass, safety glass for automobiles, and mirrors. Work contemplated by this classification includes cutting of glass to customers specified dimensions, beveling, buffing, grinding, polishing, silvering of plate glass, and the installation of glass into frames within the shop or adjacent yard. Some dealers may specialize in cutting, selling or installing fabricated flat glass or they may also sell and install plate, laminated, window, cathedral, stained, bullet proof, opalescent flat, picture, skylight and tempered glass. Most glass dealers will cut glass to order. Tools and equipment include metal and wood cutting tools and machinery, grinders, sanders, drills, saws, knives, suction cups, putty, caulking, cleaning solvents, forklifts, packing materials, delivery and service vehicles. This classification includes the sale of accessories for flat glass such as sealants, screening, aluminum frames for storm windows and doors, mirror backings, frames and glass cleaners.

This classification excludes establishments engaged in the installation of glass, mirrors, aluminum or wood window sashes or similar products away from the shop which are to be reported separately in classification 0511; manufacturing of glass which is to be reported separately in classification 3503; glass merchants who perform glass tempering which are to be reported separately in classification 1108-02; and merchants who specialize in selling or installing auto glass which are to be reported separately in classification 1108-04.

1108-04 Auto glass merchants

Applies to establishments engaged in selling and installing automobile glass in vehicles. In addition to selling and installing new or replacement auto glass, merchants typically repair auto windshield cracks, scratches, bullseyes and breaks. Tools and equipment include metal and wood cutting tools, grinders, sanders, drills, saws, knives, windshield sticks, suction cups, putty, caulking, cleaning solvents, delivery and service vehicles. Solar tinting of auto glass with film to reduce heat and glare may also be performed, as well as selling and installing sun roofs. Auto glass merchants may offer 24-hour emergency service or pickup and delivery. Installation of auto glass, truck glass or boat tops performed in or away from the shop is included within the scope of this classification.

This classification excludes establishments engaged in the manufacturing of glass which are to be reported separately in classification 3503; tinting or the application of tinted plastic film to auto glass by an auto detailer which is to be reported separately in classification 3406; glass merchants who perform glass tempering which are to be reported separately in classification 1108-02; glass merchants exclusively dealing in flat glass which are to be reported in classification 1108-03; and combined auto/flat glass merchants with no tempering which are to be reported in classification 1108-05.

1108-05 Combined auto and flat glass merchants - no tempering

Applies to establishments engaged in receiving, storing and selling all types of fabricated glass and plexiglas as window glass, plate glass, safety glass for automobiles, mirrors and other types of glass at a permanent shop location or adjacent yard. Work contemplated by this classification includes cutting of glass to customers' specified dimensions, beveling, buffing, grinding, polishing, silvering of plate glass and the installation of glass into frames. Tools and equipment include metal and wood cutting tools and machinery, grinders, sanders, drills, saws, knives, suction cups, windshield sticks, putty, caulking, cleaning solvents, forklifts, packing materials, and delivery and service vehicles. A glass merchant performing the installation of glass in automobiles is also included within the scope of this classification; as are related services such as, but not limited to, repair of auto windshield cracks, scratches, bullseyes and breaks; in vehicle tinting of auto glass to reduce heat and glare; and installing sun roofs. Other dealers may specialize in cutting, selling or installing fabricated flat glass or they may also sell and install plate, laminated, window, cathedral, stained, bullet proof, opalescent flat, picture, skylight and tempered glass. Included within the scope of this classification is the sale of accessories for flat glass such as sealants, screening, aluminum frames for storm windows and doors, mirror backings, frames and glass cleaners.

This classification excludes establishments engaged in the installation of glass, aluminum or wood window sashes or similar products away from the shop which are to be reported separately in classification 0511; manufacturing of glass which is to be reported separately in classification 3503; tinting or the application of tinted plastic film to auto glass by an auto detailer which is to be reported separately in classifica-

tion 3406; glass merchants who perform glass tempering which are to be reported separately in classification 1108-02; and flat glass merchants who do not sell or install auto glass which are to be reported separately in classification 1108-03.

1108-06 Glass frosting, etching, beveling or grinding

Applies to establishments engaged in shaping and finishing solid glass by cutting, frosting, etching, beveling, grinding, sandblasting, carving, glue chipping, decorating or grooving. Custom items manufactured in this classification include, but are not limited to, video game tops, glass signs, glass used in the assembly of electrical appliances such as microwave ovens, electronically controlled cabinets and display panels, and mirrors of all sizes. Machinery includes diamond or glass cutting saws, diamond or glass grinding wheels and discs, drills, polishing laps, etching tools and other hand tools. In the manufacture of mirrors, metallic solutions (usually silver), shellacs or varnishes, paints, and plate glass are received from outside sources. The glass is cut to size, ground, smoothed, and the edges may be beveled. Hole drilling, chemical etching, drying, buffing and polishing may be performed. Reflective surfaces are generally produced by pouring or spraying metallic solutions over prepared glass. Heavier coats are obtained by successive applications of the plating solution. After applying the plating solution, the mirrors are sprayed or hand brushed with shellac or varnish, then with paint. Frames, handles or similar finishings may be attached. Production manufacturing of insulated glass by sealing together two or more sheets of glass with an air space between them is also included when performed by employees of an employer subject to this classification.

This classification excludes the mining, digging or quarrying of raw materials which is to be reported separately in the applicable classification; glass merchants who do incidental grinding, beveling, silvering and cutting of glass who are to be reported separately in the classification applicable to the type of glass they specialize in; establishments manufacturing optical goods or telescopes, or perform precision grinding of blank or rough lenses which are to be reported separately in classification 6604; and establishments engaged in manufacturing stained or leaded glassware, or in melting or blowing glass which are to be reported separately in classification 3503.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-53805, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-53805, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-53805, filed 5/31/96, effective 7/1/96; 86-12-041 (Order 86-18), § 296-17-53805, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-53805, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-53805, filed 2/28/85, effective 4/1/85; 82-24-047 (Order 82-38), § 296-17-53805, filed 11/29/82, effective 1/1/83.]

WAC 296-17-539 Classification 1301.

1301-00 Electric light and power plants operated by cities, towns, or counties

Applies to establishments, operated by a city, town, or county, engaged in generating and distributing electricity to their residents. These may be hydroelectric, fossil fuel steam or turbo-generator plants. This classification includes the regular installation, maintenance and repair of power plant machinery and equipment, the extension and maintenance of

lines (including poles, towers and underground lines), the installation and maintenance of circuit breakers and transformers on poles, pole-to-house hook-ups (service connections), meter installation and meter readers when done by employees of an employer having operations subject to this classification. Machinery and equipment may include, but not be limited to, boilers, turbines, generators, cables, transformers, switchgears, circuit breakers, control panels, substations, poles, lines, relays, computers, cranes, forklifts, vehicles and garages, warehouse equipment, meters and hand tools. Clerical office and administrative personnel are to be reported separately in classification 5305 for a city or town, or 5306 for a county.

This classification excludes contractors engaged in underground line construction maintenance or repair who are to be reported separately in classification 0107; contractors engaged in overhead line, pole and tower construction, maintenance or repair, who are to be reported separately in classification 0509; contractors engaged in wiring within buildings who are to be reported separately in classification 0601; contractors engaged in the installation of machinery or equipment who are to be reported separately in classification 0601 or 0603 as applicable; and the construction of any buildings which is to be reported separately in the applicable construction classification.

1301-01 Electric light and power cooperatives

Applies to establishments, in the form of cooperatives, engaged in generating and distributing electricity to their customers. A cooperative is formed by, and owned jointly by, those who make use of the service being provided. The power may be generated by a hydroelectric, fossil fuel steam or turbo-generator plant. This classification is appropriate whether a cooperative owns a power plant or is distributing power purchased from another utility company. Work contemplated by this classification includes the regular installation, maintenance and repair of power plant machinery and equipment, the extension and maintenance of lines (including poles, towers and underground lines), the installation and maintenance of circuit breakers and transformers on poles, pole-to-house hook-ups (service connections), meter installation and meter readers when done by employees of an employer having operations subject to this classification. Machinery and equipment may include, but not be limited to, boilers, turbines, generators, cables, transformers, switchgears, circuit breakers, control panels, substations, poles, lines, relays, computers, cranes, forklifts, vehicles and garages, warehouse equipment, meters and hand tools. Clerical office and administrative personnel are to be reported separately as appropriate for the ownership of the cooperative; 5305 for cities and towns; 5306 for counties; or 4904 and 6303 for nonmunicipal.

This classification excludes contractors engaged in underground line construction maintenance or repair who are to be reported separately in classification 0107; contractors engaged in overhead line, pole and tower construction, maintenance or repair, who are to be reported separately in classification 0509; contractors engaged in wiring within buildings who are to be reported separately in classification 0601; contractors engaged in the installation of machinery or equip-

ment who are to be reported separately in classification 0601 or 0603 as applicable; and the construction of any buildings which is to be reported separately in the applicable construction classification.

1301-02 Electric light and power plants operated by public utility districts

Applies to establishments, in the form of a public utility district (P.U.D.), engaged in generating and distributing electric power to a part of a county. This classification applies whether a P.U.D. owns a power plant or is distributing power purchased from another utility. Work contemplated by this classification includes the regular installation, maintenance and repair of power plant machinery and equipment, the extension and maintenance of lines (including poles, towers and underground lines), the installation and maintenance of circuit breakers and transformers on poles, pole-to-house hook-ups (service connections), meter installation and meter readers when done by employees of an employer having operations subject to this classification. Machinery and equipment may include, but not be limited to, boilers, turbines, generators, cables, transformers, switchgears, circuit breakers, control panels, substations, poles, lines, relays, computers, cranes, forklifts, vehicles and garages, warehouse equipment, meters and hand tools. Clerical office and administrative personnel are to be reported separately in 5306.

This classification excludes contractors engaged in underground line construction maintenance or repair who are to be reported separately in classification 0107; contractors engaged in overhead line, pole and tower construction, maintenance or repair, who are to be reported separately in classification 0509; contractors engaged in wiring within buildings who are to be reported separately in classification 0601; contractors engaged in the installation of machinery or equipment who are to be reported separately in classification 0601 or 0603 as applicable; and the construction of any buildings which is to be reported separately in the applicable construction classification.

1301-05 Steam heat power plants

Applies to establishments engaged in the operation of a steam heat power plant. These businesses use coal, oil, natural gases or electric power to produce steam which is distributed through a network of under or overground pipes to customers (the plant must be very near the purchaser). The initial process of producing the steam is the same as the process used in a steam powered electric generating plant, but the steam is channeled out to the purchaser instead of being used to turn turbines. The purchasers use the steam for heating buildings, operating saunas, as a heat source for cooking or processing in food processing plants, breweries or restaurants, producing the heat needed for wood drying kilns, or to convert back to hot water. Work contemplated by this classification includes, but is not limited to, the regular installation, maintenance or repair of plant machinery and equipment, the extension and maintenance of over or underground pipes, main-to-user hook-ups, meter installation and meter readers. Clerical office and administrative personnel are to be reported separately as appropriate for the ownership of the steam plant; 5305 for cities and towns; 5306 for counties; or 4904 and 6303 for nonmunicipal.

This classification excludes contractors engaged in over or underground pipeline construction, maintenance or repair, main-to-house line extensions and hook-ups, who are to be reported separately in classification 0107; contractors engaged in the installation or contract maintenance of machinery or equipment who are to be reported separately in classification 0603; and the construction of any buildings which is to be reported separately in the applicable construction classification.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-539, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-539, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-539, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-539, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-539, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-539, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-539, filed 11/9/73, effective 1/1/74.]

WAC 296-17-544 Classification 1404.

1404-04 Bus companies and transit systems

Applies to bus companies, transit systems, contract bus driving, and other establishments engaged in public transportation services such as, but not limited to, scenic bus tour services, contract school bus services, shuttle van services, and public transit systems. Work contemplated by this classification includes driving and related loading/unloading duties, inspecting and maintaining vehicles, and all terminal employment except for office personnel. Ticket sellers may be reported separately in classification 4904 provided that they do not handle baggage and that all the conditions of the standard exception general reporting rules have been met.

This classification excludes limousine companies which are to be reported separately in classification 6301.

1404-06 Vessels, ferries, tugs, and steamboats, N.O.C.

Applies to employees not covered under federal jurisdiction, or another classification (N.O.C.), who provide services for seaworthy vessels such as ferries, tugs, or steamboats at the docking site or on adjacent land. Vessels may operate seasonal or year-round. Employments include, but are not limited to, dock workers, maintenance workers, traffic control personnel, and night security personnel.

Special note: Care should be exercised prior to assignment of this classification as the workers could be subject to federal laws covered by the Jones Act or by the U.S. Longshore and Harbor Workers Act. A detailed description of these acts can be found in classifications 0104 or 0202.

1404-07 Train rides

Applies to establishments engaged in the operation of passenger excursion train rides for scenic or amusement purposes on an intrastate basis only. Excursion train rides are typically operated from a mountain, lake or similar site. The trains may operate on a seasonal basis in direct relation to the volume of tourists, weather conditions, or dates of local celebration. Employments in this classification include, but are not limited to, drivers/engineers, guides, lecturers, hostesses, and maintenance personnel. Ticket sellers may be reported separately in classification 4904 provided that they do not handle baggage and that the conditions of the standard exception general reporting rules have been met. On-board food service personnel may be reported separately in classification

3905 as long as their duties are limited to food service and they do not facilitate the train ride or train ride operation in any way.

1404-11 Escort and pilot cars

Applies to establishments that provide escort or pilot car services for others. The duties include driving ahead of, or behind, various types of vehicles.

This classification excludes employees of an employer assigned to drive escort or pilot cars in connection with the delivery of equipment, buildings, goods, or similar items which the employer sells or contracts to deliver. Such employment is to be reported separately in the classification applicable to sales or delivery of such items. For example, an escort driver employed by a common carrier transporting a modular home to a customer's site is to be reported separately in classification 1102.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-544, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-544, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 91-12-014, § 296-17-544, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035, 87-12-032 (Order 87-12), § 296-17-544, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-544, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-544, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-544, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-544, filed 11/9/73, effective 1/1/74.]

WAC 296-17-545 Classification 1501.

1501-00 Counties and taxing districts, N.O.C. - all other employees

Applies to employees of counties and taxing districts, not covered by another classification (N.O.C.), who perform manual labor, or who supervise a work crew performing manual labor such as custodial or maintenance, and machinery or equipment operators. This classification includes administrative personnel such as engineers, safety inspectors, and biologists who have field exposure, and internal inventory and supply clerks. For purposes of this classification, field exposure is defined as any exposure other than the normal travel to or from a work assignment.

This classification excludes electric light and power public utility districts which are to be reported separately in classification 1301; bus or transit systems which are to be reported separately in classification 1404; water distribution or purification system public utility districts which are to be reported separately in classification 1507; irrigation system public utility districts which are to be reported separately in classification 1507; port districts which are to be reported separately in classification 4201; school districts, library districts or museum districts which are to be reported separately in classifications 6103 or 6104; hospital districts which are to be reported separately in classification 6105; fire fighters who are to be reported separately in classification 6904; law enforcement officers who are to be reported separately in classification 6905; clerical office and administrative employees who are to be reported separately in classification 5306, and volunteers who are to be reported separately in classifications 6901 or 6906, as appropriate.

1501-01 Housing authorities, N.O.C. - all other employees

Applies to employees of housing authorities, not covered by another classification, who perform manual labor, or who supervise a work crew performing manual labor such as custodial or maintenance, and machinery or equipment operators. This classification includes all functional operations of a housing authority such as inspection, maintenance and repairs, including minor structural repairs, janitorial service, and building and grounds maintenance. Also included in this classification are meter readers, security personnel, other than those with law enforcement powers, administrative personnel such as engineers and safety inspectors who have field exposure, and internal inventory and supply clerks. For purposes of this classification, housing authorities are defined as nonprofit, public and political entities which serve the needs of a specific city, county or Indian tribe. The nature and objectives of some of the projects undertaken by housing authorities include providing decent, safe and sanitary living accommodations for low income persons, or providing group homes or halfway houses to serve developmentally or otherwise disabled persons or juveniles released from correctional facilities. A housing authority has the power to prepare, carry out, lease and operate housing facilities; to provide for the construction, reconstruction, improvement, alteration or repair of any housing project; to sell or rent dwellings forming part of the project to or for persons of low income; to acquire, lease, rent or sell or otherwise dispose of any commercial space located in buildings or structures containing a housing project; to arrange or contract for the furnishing of the units; and to investigate into the means and methods of improving such conditions where there is a shortage of suitable, safe and sanitary dwelling accommodations for persons of low income.

This classification excludes new construction or major alteration activities which are to be reported separately in the appropriate construction classifications; clerical office and administrative employees who are to be reported separately in classification 5306; security personnel with law enforcement powers who are to be reported separately in classification 6905; and volunteers who are to be reported separately in classifications 6901 or 6906, as appropriate.

1501-08 Native American tribal councils - all other employees

Applies to employees of Native American tribal councils who perform manual labor, or who supervise a work crew performing manual labor such as custodial or maintenance, and machinery or equipment operators. This classification includes administrative personnel such as engineers, safety inspectors, and biologists who have field exposure, and internal inventory and supply clerks of the tribal council. For purposes of this classification, field exposure is defined as any exposure other than the normal travel to and from a work assignment.

This classification excludes electric light and power public utility districts which are to be reported separately in classification 1301; bus or transit systems which are to be reported separately in classification 1404; water distribution or purification system public utility districts which are to be reported separately in classification 1507; irrigation system

public utility districts which are to be reported separately in classification 1507; school districts, library districts or museum districts which are to be reported separately in classifications 6103 or 6104; hospital districts which are to be reported separately in classification 6105; fire fighters who are to be reported separately in classification 6904; law enforcement officers who are to be reported separately in classifications 6905 and 6906; new construction or reconstruction activities which are to be reported separately in the appropriate construction classification; clerical office and administrative employees who are to be reported separately in classification 5306.

Special notes: Housing authorities operating under the name of, and for the benefit of, a particular tribe are not exempt from mandatory coverage. These housing authorities are federally funded and are not owned or controlled by a tribe.

Only those tribal operations which are also provided by county governments are subject to classification 1501. The following activities, such as but not limited to, visiting nurses and home health care, grounds keepers, building maintenance, park maintenance, road maintenance, and garbage and sewer works, are considered to be normal operations to be included in this classification. All other tribal council operations which are not normally performed by a county government shall be assigned the appropriate classification for the activities being performed. The following operations, such as but not limited to, meals on wheels, bingo parlors, casinos, liquor stores, tobacco stores, grocery stores, food banks, gift shops, restaurants, motels/hotels, Head Start programs, fish/shellfish hatcheries, logging, and tree planting/reforestation are outside the scope of classification 1501 and are to be reported separately in the applicable classifications.

1501-09 Military base maintenance, N.O.C.

Applies to establishments, not covered by another classification (N.O.C.), engaged in providing all support operations and services on a military base on a contract basis. Such services include, but are not limited to, data processing, photography, mail delivery (on post and to other military facilities), hotel/motel services, mess halls, recreational facilities, grounds and building maintenance, vehicle maintenance, and may also include the maintenance of such facilities as water works, sewer treatment plants and roads.

This classification excludes new construction or construction repair projects which are to be reported separately in the applicable construction classification for the work being performed; contracts for specific activities on a military base such as, but not limited to, building maintenance, club or mess hall operations, or vehicle maintenance, which are to be reported separately in the applicable classification for the work being performed; firefighters who are to be reported separately in classification 6904; law enforcement officers who are to be reported separately in classification 6905; and clerical office and administrative employees who are to be reported separately in classification 5306.

Special note: Classification 1501-09 is to be assigned to an establishment only when *all* support services on a military base are being provided by the contractor.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-545, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-545, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-545, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 54.16.035, 93-12-093, § 296-17-545, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035, 85-24-032 (Order 85-33), § 296-17-545, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-545, filed 11/30/83, effective 1/1/84; 80-17-016 (Order 80-23), § 296-17-545, filed 11/13/80, effective 1/1/81; Order 77-27, § 296-17-545, filed 11/30/77, effective 1/1/78; Emergency Order 77-25, § 296-17-545, filed 12/1/77; Order 73-22, § 296-17-545, filed 11/9/73, effective 1/1/74.]

WAC 296-17-552 Classification 1801.

1801-01 Lead smelting, sintering, or refining; calcium carbide manufacturing

Applies to establishments primarily engaged in the smelting, sintering, or refining of lead, including the manufacturing of calcium carbide. The lead ore most commonly mined is galena which is the sulfide of lead. The ore is mixed with other metalliferous minerals, such as sphalerite, copper pyrites and iron pyrites. The smelting process consists of fusing or separating the metallic elements. After ore has been received, the process begins by crushing, washing and screening the ore. There may be various steps of milling, concentration or amalgamation (floatation) to separate the galena from the sphalerite and other minerals. The roasting or sintering process takes place in rotary kilns or other types of furnaces. In this way the material is sintered or converted into lumps (called sinter) which are mixed with coke and placed into a shaft furnace. The material is then desilverized which is achieved by adding metallic zinc and raising the temperature sufficiently to dissolve it. The molten metal is then cast into ingots. The ingots may go through further refining processes or may be considered a finished product. This classification also includes the manufacturing of calcium carbide which is a crystalline material produced by heating pulverized limestone or quicklime with carbon and used to generate acetylene gas, as a dehydrating agent, and in making graphite and hydrogen.

This classification excludes aluminum smelting operations which are to be reported separately in classification 1802; the smelting, sintering or refining of ores not covered by another classification, (N.O.C.) which is to be reported separately in classification 1801-08; the recovering, refining or reprocessing of metals which is to be reported separately in classification 1801-09; ore reduction which is to be reported separately in classification 1701; and open pit or underground mining operations which are to be reported separately in the classification applicable to the mining being performed.

1801-03 Steel or iron rolling mills; rolling mills, N.O.C.

Applies to establishments engaged in operating iron or steel rolling mills. In a rolling mill ingots and/or slabs of steel are rolled (i.e., they are passed between rollers whereby they undergo an increase in length and a corresponding reduction in depth). The rollers used by the rolling mills vary widely in size and shape, depending on the type of rolled section(s) to be produced. Depending upon the thickness of the metal to start and the desired thickness when finished, a single piece of metal may pass through the same or a different set of rollers several times.

Rolling mills for pipes may be divided into two categories - welded pipes and seamed pipes. Welded pipes are produced from a steel strip which is bent to a tubular shape and whose edges are then joined by welding. Seamed pipes are produced from cast or rolled billets at rolling temperature. There are different processes for both kinds of manufacturing. Whatever method is used the metals are somehow heated to temperatures up to 1400 degrees Fahrenheit. The equipment may include, but is not limited to, rakes, ladle, forklifts and front loaders.

This classification excludes aluminum smelting plant operations which are to be reported separately in classification 1802, and establishments engaged in the manufacture of pipe or tube from iron or steel by drawing or bending which are to be reported separately in classification 5101.

1801-08 Ore smelting, sintering or refining, N.O.C.

Applies to establishments engaged in the smelting, sintering, or refining of ores not covered by another classification (N.O.C.). Smelting and sintering are refining processes which use different properties of heat which may or may not reduce the ore to molten form. Temperatures are usually lower than 1400 degrees Fahrenheit. Ore is received direct from the mine or in a variety of forms such as, but not limited to, pellets, particles, molds and briquettes. The process begins by crushing, washing and screening; there may be various steps of milling, concentration or amalgamation. The roasting or sintering process takes place in rotary kilns or other types of furnaces. In this way the material is sintered or converted into lumps (called sinter) which may be mixed with other materials and placed into a shaft furnace. The molten metal ore is then cast or recast into ingots. The ingots may go through further refining processes or may be considered a finished product.

This classification excludes aluminum smelting operations which are to be reported separately in classification 1802; the smelting, sintering or refining of lead which is to be reported separately in classification 1801-01; the recovering, refining or reprocessing of metals which is to be reported separately in classification 1801-09; ore reduction which is to be reported separately in classification 1701; and open pit or underground mining operations which are to be reported separately in the classification applicable to the mining being performed.

1801-09 Metal recovering, refining or reprocessing

Applies to establishments engaged in the recovering, refining, or reprocessing of metals. These establishments are considered secondary processors or reproducers to primary metal producers. The primary producer uses ore to manufacture metal, whereas, the secondary processors or reproducers will recover, refine, or reproduce refined metals from coarse metal. Types of metal include, but are not limited to, gold, aluminum, silver, lead, and zinc. Metal comes in various forms to include cast ingots, dross, and scrap material. The scrap material and dross are recycled to extract reusable metallic elements. Other metals are reprocessed and may include adding alloys and/or other elements, or recasting the metals into different shapes and sizes. An example may include adding magnesium to zinc as part of the recycling process in which zinc oxide is produced and sold to rubber

companies for manufacturing tires and other rubber products. Metals are weighed, sorted and/or sifted through a variety of screens and includes crushing as needed. Next, the materials are placed in an oven or furnace and chemicals and/or alloys are added. At this point the metal may be placed in molds and cooled by air or water. Finished products are inspected, graded, weighed, packaged and shipped. To assist in the processing function, ladles, rakes, conveyers, scales, hoist, front end loaders and forklifts may be used. This classification also includes the incidental buying and selling of scrap metal.

This classification excludes aluminum smelting operations which are to be reported separately in classification 1802; the smelting, sintering or refining of lead which is to be reported separately in classification 1801-01; the smelting, sintering or refining of ores not covered by another classification N.O.C., which is to be reported separately in classification 1801-08; ore reduction which is to be reported separately in classification 1701; scrap metal dealers which are to be reported separately in classification 0604; and establishments which compact or recycle metal containers such as aluminum or tin cans which are to be reported separately in classification 2102.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-552, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-552, filed 8/28/98, effective 10/1/98; 88-12-050 (Order 88-06), § 296-17-552, filed 5/31/88, effective 7/1/88; 85-24-032 (Order 85-33), § 296-17-552, filed 11/27/85, effective 1/1/86; Order 73-22, § 296-17-552, filed 11/9/73, effective 1/1/74.]

WAC 296-17-564 Classification 2104.

2104-01 Vegetable packing - fresh

Applies to establishments engaged in the packing of fresh vegetables. These operations are usually located in produce growing areas and are generally seasonal. The vegetables are generally brought to the packing plant by the farmer or co-op drivers, but some packing plants may employ their own drivers to pick up the product from the local farms or co-op. Typical activities of the packing operation include, but are not limited to, sorting, grading, cleaning, trimming, packing and shipping of the vegetables. Various packing containers such as plastic bags, boxes, barrels, crates, and baskets may be used. The packing may be done by hand for fragile vegetables or by machine for the more sturdy produce. This classification includes cold storage operations if it is used solely for the storage of their own produce. Drivers employed by these establishments who pick up the vegetables from the suppliers or deliver the packaged product to the market are included in this classification. A farm operation that grows and packs their own fresh vegetables or packs other farms' fresh vegetables in addition to their own is to be assigned this classification (2104) for the packing operation. However, if the farmer only sorts and stores the fresh vegetables, the appropriate agricultural classification is applicable to both the growing and sorting/storage operations. This classification also includes establishments engaged in processing potatoes into seed potatoes. Processing plants receive whole potatoes from their suppliers. At the plant the potatoes are moved along on a conveyor belt, cleaned as appropriate, cut into small pieces (usually quarters), and treated with a fumigant powder or other sterilizer. The

smaller pieces, referred to as "seed potatoes," are delivered to farmers who plant them for future crops.

This classification excludes fresh fruit packing which is to be reported separately in classification 2104-02; cannery or freezing operations and/or any processing of the vegetables which are to be reported separately in classification 3902; and cold storage operations not exclusively part of a packing operation which are to be reported separately in either classification 4401 or 4404.

2104-02 Fruit packing - fresh

Applies to establishments engaged in the packing of fresh fruit. These operations are usually located in produce growing areas and generally are seasonal. The fruit may be brought to the packing plant by the farmer or co-op drivers, but some packing plants may employ their own drivers to pick up the product from the local farms or co-op. Typical activities of the packing operation include, but are not limited to, sorting, grading, cleaning, trimming, packing and shipping the fruit. Various packing containers such as plastic bags, boxes, barrels, crates and baskets may be used. The packing may be done by hand for fragile fruit or by machine for the more sturdy produce. This classification includes any cold storage operations if it is used solely for the storage of their own produce. Drivers employed by these establishments who pick up the fruit from the farmer or deliver the packaged product to the market are included in this classification. A farm operation that grows and packs their own fresh fruit, or packs other farms' fresh fruit in addition to their own, is to be assigned this classification (2104) for the packing operation. However, if the farmer only sorts and stores the fresh fruit the appropriate agricultural classification is applicable to both the growing and sorting/storage operations.

This classification excludes fresh vegetable packing which is reported separately in classification 2104-01; cannery or freezing operations and/or any processing of the fruit which are to be reported separately in classification 3902; and cold storage operations not exclusively part of a packing operation which is reported separately in either classification 4401 or 4404.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-564, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-564, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-564, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-564, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-564, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-564, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-564, filed 11/9/73, effective 1/1/74.]

WAC 296-17-57603 Classification 3304.

3304-00 Fish processors, packers and repackagers - wholesale or combined wholesale/retail

Applies to establishments engaged in processing, packing, and repackaging fish such as salmon, cod, whitefish, halibut, tuna, and/or shellfish when conducted by a wholesale or combined wholesale/retail operation. Typically, fish will arrive at a port via a commercial fishing vessel. Before the load of fish is accepted the wholesaler will inspect the commercial fishing vessel's records to ensure that the fish were caught, handled and stored in accordance with all applicable laws. The fish is then unloaded, identified, inspected for

quality, weighed and stored in a refrigerated area or a freezer to await further disposition. Fish are processed, packed and repackaged as requested by the customers. Processing may include, but is not limited to, cutting, filleting, cooking, and/or canning. The fish may be sold to fish and meat markets, supermarkets, grocery stores, restaurants, or other wholesale dealers. This classification includes fishing activities that are not covered by another classification (N.O.C.) and the harvesting, planting or packaging of aquatic plants or shellfish obtained from natural areas where the husbandry of the resource is not an integral part of the operation.

This classification excludes establishments engaged in the cold storage or locker operations of products owned by others which are to be reported separately in classifications 4401 or 4404 as applicable; establishments engaged in the raising, harvesting and subsequent processing and packing of shellfish which are to be reported separately in the appropriate classifications; and establishments engaged exclusively in retail fish activities, or the packaging of whole minnow, herring, or anchovy (not processed), which are to be reported separately in classification 3303.

3304-01 Meat and/or poultry dealers - wholesale or combined wholesale/retail

Applies to establishments engaged in the wholesale or combined wholesale/retail distribution of fresh, frozen, cured, or smoked meat or poultry. Wholesale dealers generally purchase meat (whole, half, or quarter carcasses) from slaughterhouses, and poultry from poultry processing plants. The meat or poultry is cut into steaks, chops, roasts, fillets or poultry parts, for sale to commercial or institutional customers such as restaurants, hotels, grocery stores, meat and poultry markets, hospitals, and prisons. Wholesale dealers typically do not have display cases for the meat or poultry and receive orders by telephone or by mail. This classification includes the processing and butchering of poultry.

This classification excludes meat products manufacturing, canning or dehydrating, and packing house or slaughterhouse operations, which are to be reported separately in classification 4301; custom meat cutting operations, including farm kill, which are to be reported separately in classification 4302; cold storage or locker operations which are to be reported separately in classifications 4401 or 4404 as applicable, when conducted as a separate and distinct business; establishments engaged in processing, packaging, and repackaging fish which are to be reported separately in classification 3304-00; and retail meat, fish and poultry dealers who are to be reported separately in classification 3303.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-57603, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-57603, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-57603, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 89-24-051 (Order 89-22), § 296-17-57603, filed 12/1/89, effective 1/1/90.]

WAC 296-17-580 Classification 3402.

3402-00 Air compressor: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of air compressors. This includes air or gas compressors used for paint sprayers, air tools, tire inflation, and general industrial purposes. Operations contemplated

include, but are not limited to, welding, machining, general mechanical and electrical work. Machinery and equipment includes, but is not limited to, hand and air tools, welders, punches, shears, and compression equipment. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-01 Printing or bookbinding machinery: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of printing or bookbinding machinery. The outside casings of the machines may be made of plate metal that varies between 1" to 2 1/2" in thickness. The machines used to make the presses and binding machinery may include both Computer Numeric Controlled (CNC) and manual mills and lathes. Other machinery used in the manufacturing process includes, but is not limited to, welders or cutters, grinders, and drill presses. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; and the set up, installation and repair of printing or bookbinding machinery which is to be reported separately in classification 0603.

3402-02 Pump, safe, scale, auto jack, and water meter: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of pumps, safes, scales, auto jacks, and water meters. Materials range from brass screws and rubber washers used to rebuild water meters to plate metal and steel castings used for safe and pump manufacturing. Machinery includes, but is not limited to, hand tools used for repairs, lathes, welders, and pressure testers. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; the installation and repair of safes which is to be reported separately in classification 0607; and the installation of pumps which is to be reported separately in the applicable classification.

3402-03 Shoe or textile machinery: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of shoe machinery or textile machinery. Metal materials used vary in size, shape and dimension. Machinery includes, but is not limited to, drills, mills, lathes, saws, and welders. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and the installation and repair of shoe or textile machinery which is to be reported separately in classification 0603.

3402-04 Confectioners or food processing machinery: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of food processing or confectioners machinery. Metal materials used vary in size, shape and weight. These establishments often have an assembly line operation and a separate electronic assembly area. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and the installation and repair of confectioners and food processing machinery which is to be reported separately in classification 0603.

3402-05 Machine shops, N.O.C.

Applies to establishments engaged in general machine shop operations not covered by another classification (N.O.C.), tool sharpening, and mobile welding shops. Many of the establishments in this classification are "job shops." Size and shape of materials vary with steel and aluminum being the most common. Plastics, light weight aluminum, and alloyed metals are becoming increasingly popular in the manufacture of equipment for some industries. These establishments often have welding shops along with machine shops. Machinery and equipment includes, but is not limited to, mills, lathes, grinders, saws, welding equipment, inspection equipment, and material handling equipment. Machinery is both manual and Computer Numeric Controlled (CNC). This classification also includes "mobile shops" which are used *exclusively* to repair machinery or equipment. A "mobile shop" in this classification usually means a van or pick up pulling a utility trailer equipped with hand tools, specialty tools, air tools, a compressor, and a portable welding unit. The machinery or equipment is usually repaired at the

customer's location, however, sometimes the broken part is removed and taken back to the shop for repair.

This classification excludes repairs to buildings and structures which are to be reported separately in the appropriate construction classification, and mechanical repairs which are to be reported separately in the classification applicable to the work being performed.

Special note: The term "job shop" is an industry term that means the shop will produce products to customer specifications.

3402-06 Power saw, lawn and garden equipment, small motor, N.O.C.: Repair

Applies to establishments engaged in repairing small power tools, small motors powered by gas or diesel, outboard marine engines, and lawn and garden equipment not covered by another classification (N.O.C.). The largest piece of equipment repaired in this classification is generally a riding lawn mower. Classification 3402-06 is assigned in conjunction with a store classification for establishments that have a store operation and also repair the type of items they sell. Classification 3402-06 may also be assigned to a manufacturer representative who performs warranty repairs. Tools used in this type of repair are mainly hand and air tools. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and the repair of electrical motors which is to be reported separately in classification 5201.

3402-07 Gear: Manufacturing or grinding

Applies to establishments engaged in the manufacture or grinding of gears. Establishments in this classification may also cut key slots and broaches. Establishments that cut stock to manufacture the gear are often not the same ones that perform the final grinding process. Gears may go through two, three, or four different grinding, slotting, and/or keying establishments and then go to another establishment for electroplating or galvanizing before they are ready for sale or use. Precision machine shops may grind gears to the ten thousandths of an inch. Materials used are usually stainless steel, aluminum, or plastic. Machinery includes, but is not limited to, gear shapers, drill presses, mill, hobbers, grinders, some of which might be Computer Numeric Controlled (CNC). This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-08 Elevator: Manufacturing

Applies to establishments engaged in the manufacture of elevators and associated electronic components. Machinery includes, but is not limited to, mills, drills, lathes, saws, and grinders. This classification includes the repair of items

being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and the installation, service, and repair of elevators which is to be reported separately in classification 0602.

3402-11 Metal goods: Manufacturing and shop services (temporary classification)

Applies temporarily to all establishments assigned any classification within WAC 296-17-580. When the metal goods study is complete, the establishments within this classification will be assigned to the appropriate classifications. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation.

This classification excludes all activities away from the shop or plant.

3402-12 Multimedia blasting

Applies to establishments engaged in multimedia (such as, but not limited to, glass, plastic and sand) blasting operations which strip paint or other coatings from metal or fiberglass. Most of the blasting operations in this classification are done on automobiles, but it also applies to establishments that perform blasting on items such as, but not limited to, barbecue grills, and cast iron pieces. Multimedia blasting processes in this classification are performed in a shop, use less air pressure and media with softer finishes than other blasting operations. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and sandblasting of buildings or structures which is to be reported separately in classification 0504.

3402-14 Furnace, heater or radiator: Manufacturing

Applies to establishments engaged in the manufacture of furnaces, radiators, or similar heating fixtures. Materials include, but are not limited to, metal cast parts, sheet metal, aluminum, or stainless steel. Machinery includes, but is not limited to, hand tools, solder guns, punches, lathes, and saws. Establishments in this classification may have separate areas for electronic assembly and/or painting. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; establishments engaged in the manufacture of

radiators for automobiles or trucks which are to be reported separately in classification 3402-48; and establishments engaged in the manufacture of baseboard heaters which are to be reported separately in classification 3404.

3402-16 Die casting

Applies to establishments engaged in the manufacture of products by die casting. Die casting is a manufacturing process for producing accurately-dimensioned, sharply-defined metal products which are referred to as "die castings." "Dies" are the steel molds used to mass produce the product. The process begins when ingots of various metal alloys are melted in die casting machines. The machine forces the metal into the die under hydraulic or pneumatic pressure. The casting quickly solidifies in the die, and is automatically ejected by the machine, and the cycle starts again. The castings are cleaned by grinding or sanding, which also removes any excess metal "flash." Many die casting manufacturers maintain their own machine shop for making the dies. Die making, when done as a part of die casting operations, is included within the scope of this classification. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; and establishments engaged in making dies for others which are to be reported separately in classification 3402-74.

3402-26 Saw blade: Manufacturing, assembly, or sharpening

Applies to establishments engaged in the manufacture, assembly, or sharpening of saw blades such as, but not limited to, those used in circular saws, band saws, rip saws, key-hole saws, and hand saws such as hacksaws or meat saws. This classification also includes sharpening services for items such as, but not limited to, tools, scissors, and knives. Materials include, but are not limited to, high tensile steel and carbide tipped blades. Machinery includes, but is not limited to, saws, mills, drills, and hand tools. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; establishments engaged in the repair or sharpening of chain saws which are to be reported separately in classification 3402-06; and establishments engaged in the manufacture or repair of electrical saws which are to be reported separately in classification 5201.

3402-28 Heat treating metal

Applies to establishments engaged in heat treating metal. The heat treating process may use computer numeric controlled ovens or furnaces. The oven may heat up to 1200 degrees Fahrenheit and a furnace may heat up to 2000 degrees Fahrenheit. The metal(s) is placed on a platform; the platform is hydraulically moved into the first chamber and the door is automatically closed. At this time, the oxygen is burned from the chamber. Then the second chamber door is opened and the metal enters the oven/furnace. Depending upon the specifications, the heat treating process usually takes six to sixteen hours. When the metal is finished in the heating chamber it returns automatically to the first chamber. Then the platform lowers and the metals are dipped into a cooling agent. Once the metals are cooled to room temperature the platform rises, the door opens, and the materials are removed. The process is essentially the same using noncomputer numeric controlled heat treating equipment except that, rather than being hydraulically operated, the machine operators move the metals through the system. Many establishments do not produce a product, but heat treat a variety of products to customer specifications. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-29 Nut, bolt, screw, nail, tack, rivet, eyelet spike, needle, N.O.C.: Manufacturing Sprinkler head, speedometer, carburetor: Manufacturing or assembly

Applies to establishments engaged in the manufacture of nuts, bolts, screws, nails, tacks, rivets, eyelets, spikes, and needles not covered by another classification (N.O.C.). This classification also applies to establishments engaged in the manufacture or assembly of sprinkler heads, speedometers, or carburetors. Materials include, but are not limited to, steel or iron rods which may be pressed or formed, and small component parts. Machinery includes, but is not limited to, saws, shears, presses, chuckers, threading and tapping machines, some of which may be Computer Numeric Controlled (CNC). Establishments may have separate areas for deburring, inspecting, packing and shipping. The carburetor rebuilding may be performed on vehicles that are driven or towed into the shop, or on carburetors that have been already removed from the vehicles. In either case the repairs are made exclusively with hand and air tools and sometimes a diagnostic scope and a drill press. A speedometer is usually embodied with a mileage recording mechanism. The central feature of the device is a permanent magnet. There are gears, spindles, and a drive shaft present in most speedometers. There is also a unit counting disc and a spiral spring calibrator. Hand tools are used almost exclusively in the repair of this kind of speedometer. Today many speedometers are computer controlled. Basically, if this kind of speedometer is in need of repair, a computer chip(s) is replaced, using hand tools. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification.

when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged in the manufacture of hardware that is not covered under another classification, such as handles, latches, and hinges which are to be reported separately in classification 3404, and the repair of speedometers or carburetors in a vehicle which is to be reported separately in the appropriate vehicle repair classification.

3402-32 Abrasive wheel: Manufacturing

Applies to establishments engaged in the manufacture of abrasive wheels. Manufacturing operations often include a laboratory where carbon and other materials are mixed together to form the abrasive edge of the mainly high tensile steel wheels. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-40 Welding or cutting, N.O.C. (*mobile operations limited to repair of equipment and machinery*)

Applies to establishments engaged in welding or cutting operations not covered by another classification (N.O.C.) either in the shop or at the customer's site. Steel is the predominant material along with some aluminum alloys. Machinery is predominantly welding equipment, but may include tools such as, but not limited to, grinders, saws, drills, and material handling equipment. This classification also includes "mobile shops" which are used *exclusively* to repair machinery or equipment. A "mobile shop" in this classification usually means a van or pick up pulling a utility trailer equipped with hand tools, specialty tools, air tools, a compressor, and a portable welding unit. The machinery or equipment is usually repaired at the customer's location, sometimes with the use of the customer's equipment; however, broken parts may be removed and taken back to the shop for repair.

This classification excludes repairs to buildings or structures which are to be reported separately in the appropriate construction classification and mechanical repairs which are to be reported separately in the classification applicable to the work being performed.

3402-48 Automobile or truck, radiator and heater core: Manufacturing and repair shops

Applies to establishments engaged in the manufacture and/or repair of automobile or truck radiator and heater cores. Manufacturers in this classification may have a die casting area and a separate electronic assembly area. Tools and equipment include, but are not limited to, hand tools, solder guns, and punches. Shops that repair radiators may work on

the radiators in the vehicles, but usually the radiators have been removed from the vehicle. The radiator is examined and the core may be removed. Next the radiator is cleaned, air pressurized, and dipped in a water tank to check it for leaks. Once the leaks are found they can generally be repaired by welding the holes shut. The radiator is dipped again to ensure the repair has been made properly. Cleaning the radiator may be done by sandblasting, ultra sound baths or by "rodding" the radiator to remove corrosion. Repair equipment includes, but is not limited to, welders, air and hand tools, dipping tanks, hoists, and forklifts. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-60 Office machinery, N.O.C.: Manufacturing or assembly; Cash register or sewing machines: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of cash registers, sewing machines and office machinery not covered by another classification (N.O.C.) such as, but not limited to, copiers, collators, mail/postage machines, calculators and automatic letter openers. Component parts may be metal, plastic, or wood. Operations include, but are not limited to, cutting, shaping, forming, drilling, riveting, clamping, and bolting; there may be a separate electronic assembly area. Machinery and tools vary within this classification; some establishments use hand and air tools only, others use additional equipment such as, but not limited to, saws, lathes, mills, drills, or water jets, some of which may be Computer Numeric Controlled (CNC). This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-61 Small arms: Manufacturing, assembly, or rebuild

Applies to establishments engaged in the manufacture, assembly, or rebuild of small arms. For the purpose of this classification, small arms means .50 caliber or less, such as pistols, rifles, shotguns, and light machine guns. Operations include, but are not limited to, metal stamping of casings, machining, assembling, and a high proportion of inspecting. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification

when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; establishments engaged in the manufacture of ammunition which is to be reported separately in classification 4601; the manufacture or repair of heavy arms which is to be reported separately in classification 5109; and gun stores which are to be reported separately in classification 6309.

3402-74 Tool: Manufacturing, not hot forming or stamping; Die: Manufacturing - ferrous

Applies to establishments engaged in tool manufacturing or die manufacturing, for others, from ferrous materials. Tools manufactured in this classification are usually cutting tools used in lathes, mills, rotors, and saws. Machinery includes, but is not limited to, sharpeners, grinders, lathes and mills, which are both manual or Computer Numeric Controlled (CNC). The die manufacturing included in this classification includes those made exclusively of ferrous materials including, but not limited to, jigs, fixtures, and dies for metal work in general. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged in the manufacture of machine-finished tools which are to be reported separately in classification 3402-83.

3402-77 Auto, truck, semi-trailer and bus body: Manufacturing;

Travel trailer body: Manufacturing or repair

Applies to establishments engaged in the manufacture of auto, truck, and bus bodies, and in the manufacture or repair of travel trailer bodies or cargo containers. Repairs are usually made with the use of welders or cutting torches and air or hand tools. These establishments will also repair or replace hydraulic units. Material used in the manufacture of goods in this classification is usually steel and aluminum, varying in thickness from 16 gauge to plate metal up to one inch thick. Shapes include, but are not limited to, sheet metal, tubes, solid rod or I-beams. Equipment includes, but is not limited to, shears, breaks, hydraulic presses, iron workers, drill presses, grinders, welders, hoist, cranes, and forklifts. Shops may have a finish sanding area as well as a paint area where the vehicle bodies are sprayed with primer, a body bonding material, or a finish coat of paint. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work

being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-83 Tool: Manufacturing and machine finishing

Applies to establishments engaged in manufacturing and machine finishing tools. Tools manufactured in this classification are usually hand held instruments such as, but not limited to, wrenches, screw drivers, hammers, torque wrenches, pliers, and sockets. Machinery includes, but is not limited to, air and hand tools, polishers, grinders, inspection equipment, mills, lathes, shapers, and drill presses, some of which may be Computer Numeric Control (CNC). Establishments may have a galvanizing and/or electroplating area for the finish work which is included when performed by employees of employers subject to this classification. Other establishments in this classification send the finish work out. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; establishments engaged in the manufacture of tools from ferrous materials which are to be reported separately in classification 3402-74; and establishments engaged in tool forging which are to be reported separately in classification 5106.

3402-85 Auto or truck parts: Machining or rebuild not in vehicle

Applies to establishments engaged in machining or rebuilding auto or truck parts such as, but not limited to, water pumps, fuel pumps, transmissions, heads, brake drums, ball joints, and rear ends, which are not in the vehicle. Work contemplated in this classification may also include manufacturing sockets, pulleys, shafts, fittings, flywheels, and/or bearings. Machinery includes, but is not limited to, mills, lathes, grinders, sanders, presses, welders, and balancing equipment. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged in manufacturing or rebuilding auto, truck, or aircraft engines which are to be reported separately in classification 3402-86.

3402-86 Auto, truck or aircraft engine, N.O.C.: Manufacturing or rebuilding

Applies to establishments engaged in manufacturing or rebuilding auto, truck, or aircraft engines not covered by another classification (N.O.C.), including manufacturing the component parts. Establishments in this classification often specialize in the type of engines they make or rebuild. The basic difference between automobile, truck, and aircraft engines is the size and weight of the parts being worked on.

Engine rebuild shops use many specialized machines and air tools to tear the core down to an engine block; then rebuild the engine. After the engine is stripped down to the engine block, it is placed in a machine called a baker which heats to approximately 600 degrees and bakes away the grease. After baking, the engine block is placed in a sand blaster where the surface is cleaned with very fine steel shot. The engine block is then placed in a large pressure washer which removes the steel shot. Next, the crank and cam shafts are ground and turned on machinery similar to lathes. There is usually a separate room or area which is called the "head shop" where the heads and valves are machined on valve grinders, valve facers, and head grinders. Engine rebuild shops that do not have the equipment to grind the crank and cam shafts will contract work out to other shops, or buy new crank shafts and cam shafts. Other machinery includes, but is not limited to, boring bars and hones to polish cylinder walls, small pressure washers for oil pans and other smaller parts, solvent tanks, and hoists or forklifts for lifting the engines or engine parts. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged in machining or rebuilding auto or truck parts, other than engines, which are to be reported separately in classification 3402-85.

3402-91 Bed spring or wire mattress: Manufacturing

Applies to establishments engaged in the manufacture of bed springs or wire mattresses. The wire stock is coiled and cut to length on a coiling machine, then tempered in an oven to produce the spring. The coils are fastened to the frame either by hand or by machine. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged in the manufacture of stuffed mattresses which are to be reported separately in classification 3708.

3402-93 Valve: Manufacturing

Applies to establishments engaged in the manufacture of valves. Valves regulate the flow of air, gases, liquids, or loose material through structures by opening, closing, or obstructing passageways. They are operated manually, electrically, with compressed air, or hydraulic pressure. Valves are usually cut from aluminum, steel, or stainless steel either by a Computer Numeric Controlled machine (CNC) or water jet machine. Depending upon the complexity of the valve, they are assembled in one or several stages. This classification includes the repair of items being manufactured or

assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged in the manufacture of valves made in a die mold which are to be reported separately in classification 3402-74.

3402-94 Precision machined parts, N.O.C.: Manufacturing

Applies to establishments engaged in manufacturing precision machined parts not covered by another classification (N.O.C.). Most of these establishments are "job shops." Job shops make component parts for other businesses according to customer specifications, rather than manufacturing a specific product. Many establishments in this classification manufacture precision parts for the aerospace industry. Machining usually begins with solid blocks of material such as, but not limited to, steel, aluminum, titanium, inconel, or plastic, although some hollow tube, flat bar, and angle stock may also be used. The "rough cuts" are often made on manual machines, and the finish cuts on Computer Numeric Controlled (CNC) machines. Depending on the establishment and the job specifications, a specific part may be sent to one or more additional shops to be tempered, milled, or inspected before the original establishment is through with the manufacturing process. Some parts are so sensitive that climate controlled conditions are necessary. Both manual and CNC mills and lathes are the most common types of machines used. Others include, but are not limited to, saws, drills, and grinding machines. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-95 Storage battery: Manufacturing, assembly or repair

Applies to establishments engaged in the manufacture, assembly, or repair of storage batteries. Lead ingots, weighing 20-25 pounds, are melted and poured into a mold or casting machine. After the grids are cooled lead oxide is then pumped onto each side of a grid and cured by baking in an oven of about 300 - 400 degrees F. The plates are then assembled by placing a negative separator (zinc) between a positive separator (copper), and so forth until there are enough of these cells to form the battery. Next, they are sent to a burning machine that cures the paste and plates. After the burning process, the plates are placed into a plastic or hard rubber box-like container and cured for two or three days. The plates are welded together and the top is attached to the body of the battery case with an epoxy glue. Diluted

sulfuric acid is added to the battery and then it is put on a charger. The battery is then cleaned and packed for shipping. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant; establishments engaged in the manufacture of dry cell (flashlight type) batteries which are to be reported separately in classification 3602; and establishments engaged in battery sales and installation which are to be reported separately in the applicable automotive services classification.

3402-96 Automobile or motorcycle: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of automobiles or motorcycles. Most of the manufacturing operations, such as cutting, milling, and turning, are performed with Computer Numerically Controlled (CNC) machinery. Most of the assembly operations are performed with air and hand tools. Other machinery includes but is not limited to saws, grinders, and drill presses. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant and establishments engaged only in the manufacture of auto bodies which are to be reported separately in classification 3402-77.

3402-98 Machinery, N.O.C.: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of machinery not covered by another classification (N.O.C.). For purposes of this classification, machinery means any combination of mechanical parts constructed primarily with metal. Finished products vary widely and range from hand held machines to those weighing thousands of pounds; products include, but are not limited to, grinding machines, boring machines, conveyer systems, and wood chippers. Machinery used to manufacture these items includes, but is not limited to, lathes, mills, press, breaks, shears, and welders, some of which may be Computer Numerically Controlled (CNC). This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

3402-99 Photo processing machinery: Manufacturing or assembly

Applies to establishments engaged in the manufacture or assembly of photo processing machinery such as, but not limited to, photo processors or film enlargers. This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations subject to this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation. This is a shop or plant only classification; it includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification.

This classification excludes all activities away from the shop or plant.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-580, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-580, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-580, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-580, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-580, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-580, filed 5/31/88, effective 7/1/88; 85-24-032 (Order 85-33), § 296-17-580, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-580, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-580, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-580, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-580, filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-580, filed 11/30/79, effective 1/1/80; Order 76-36, § 296-17-580, filed 11/30/76; Order 75-38, § 296-17-580, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-580, filed 11/9/73, effective 1/1/74.]

WAC 296-17-581 Classification 3403.

3403-00 Aircraft: Manufacturing

Applies to establishments engaged in the manufacture of aircraft. For the purposes of this classification "aircraft manufacturing" means the original manufacture of such aircraft as distinguished from rebuilding, modifying, or converting existing aircraft and applies *only* to the production of units that, when completed, are capable of in-air flight as distinguished from aircraft kits to be assembled by the purchaser that are not capable of air flight when sold. This classification includes aircraft operations incidental to the manufacture, such as test flights.

This classification excludes establishments engaged in the original manufacture of aircraft parts which are to be reported separately in classification 3405 or as otherwise provided for in WAC 296-17-58201; the manufacture of aircraft kits which is to be reported separately in the classification applicable to the work being performed; modification, repair or conversions made to an existing aircraft which are to be reported separately in classification 6804; and the *assembly of aircraft kits into an airplane* which is to be reported separately in classification 6804.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-581, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-581, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-581, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-581, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-581, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-581, filed 11/27/78, effective 1/1/79; Order 73-22, § 296-17-581, filed 11/9/73, effective 1/1/74.]

WAC 296-17-583 Classification 3406.**3406-00 Automotive or truck gas service stations, N.O.C.**

Applies to establishments operating full service gasoline or diesel service stations not covered by another classification (N.O.C.) and includes lube and oil change specialists and mobile lube and oil services. Full service includes, but is not limited to, pumping gas for customers, replacing wiper blades, checking and/or filling the fluid levels (oil, transmission, wiper wash and antifreeze), and adding air to the tires. The repairs included in this classification are oil and filter changes, tune-ups, replacement of brakes, front end alignments and the repair or replacement of tires. This classification includes cashiers.

This classification excludes portable automobile or truck car washes which are to be reported separately in classification 6602; establishments engaged in automobile or truck repair services and tune up specialists which are to be reported separately in classification 3411; establishments engaged in the service or repair of machinery or equipment N.O.C. which are to be reported separately in classification 6409; self-service gas stations which are to be reported separately in classification 3409; and convenience grocery stores or mini-markets with self-service gasoline operations which are to be reported separately in classification 3410.

3406-01 Automobile or truck storage garages

Applies to establishments operating automobile or truck storage garages. Generally, these types of storage garages consist of an enclosed structure and usually with more than one level of parking. Storage garages may provide additional incidental services such as, but not limited to, gasoline, tune-ups, washing and waxing services, as well as cashiers and full time attendants or security personnel.

This classification excludes portable automobile or truck car washes which are to be reported separately in classification 6602; establishments providing parking lot services which are to be reported separately in classification 6704; automobile or truck repair services which are to be reported separately in classification 3411; establishments engaged in the service or repair of machinery or equipment N.O.C. which are to be reported separately in classification 6409; self-service gas stations which are to be reported separately in classification 3409; and full service gas station services which are to be reported separately in classification 3406-00.

Special note: Storage garages applicable to this classification are distinguishable from parking lots in classification 6704 in that parking lots usually are not an enclosed structure, and they do not provide service to automobiles.

3406-04 Automobile or truck - detailing by contractor

Applies to establishments engaged in providing automobile or truck detailing services. Detailing involves complete, in-depth cleaning of exteriors and interiors such as, but not limited to, washing, waxing, polishing, buffing, vacuuming or otherwise cleaning the auto bodies, chrome work, tires, hub caps, windows, mirrors, carpets and seats. This classification includes the tinting of automobile or truck window glass when performed by employees of the detailing operation, as well as cashiers.

This classification excludes portable automobile or truck car washes which are to be reported separately in classification 6602; tinting of automobile or truck window glass performed by a glass dealer which is to be reported separately in classification 1108; detailing performed in connection with automobile or truck dealers, service centers or repair garages which are to be reported separately in classification 3411; detailing performed in connection with automobile or truck body and fender repair shops which are to be reported separately in classification 3412; detailing performed in connection with establishments engaged in the service or repair of machinery or equipment, N.O.C. which is to be reported separately in classification 6409; and detailing performed in connection with full service gas stations which are to be reported separately in classification 3406-00.

3406-05 Automobile or truck car washes

Applies to establishments providing automobile or truck washing services. This classification includes the exterior washing, waxing, polishing or buffing, cleaning of chrome and tires, and the interior cleaning of windows, carpets, dash and seats. These services may be performed at a coin operated self-service unit, or at a full service automatic unit where the vehicle is conveyed through the line assisted by attendants. This classification includes cashiers and the sale of accessory items such as, but not limited to, bottled car care products, air fresheners, floor mats, beverages and snack foods.

This classification excludes portable automobile or truck car washes which are to be reported separately in classification 6602; washing services performed in connection with automobile or truck dealers, services centers or repair garages which are to be reported separately in classification 3411; washing services performed in connection with automobile or truck body and fender repair shops which are to be reported separately in classification 3412; washing services performed in connection with establishments engaged in the service or repair of machinery or equipment, N.O.C. which are to be reported separately in classification 6409; washing services performed in connection with full service gas stations which are to be reported separately in classification 3406; washing services performed in connection with self-service gasoline operations which are to be reported separately in classification 3409; and washing services performed in connection with convenience stores that have self-service gasoline operations which are to be reported separately in classification 3410.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-583, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-583, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-583, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-583, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-583, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-583, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-583, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-583, filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.030 and 51.16.035, 79-12-086 (Order 79-18), § 296-17-583, filed 11/30/79, effective 1/1/80; Order 73-22, § 296-17-583, filed 11/9/73, effective 1/1/74.]

WAC 296-17-58502 Classification 3410.**3410-00 Convenience grocery stores or mini-markets with self-service gasoline operations**

Applies to establishments engaged in operating convenience grocery stores or mini-markets with self-service gasoline operations. These establishments provide retail sale of convenience grocery items, not just snack items, in addition to self-service gasoline. Gasoline operations are limited to self-service only where the store employee is a cashier who monitors the pumps and collects the payments inside the store. Self-service/convenience store operations in classification 3410 differ from self-service gas stations in classification 3409 in that establishments in classification 3410 provide a more extensive line of grocery items. In addition to snack foods, staples such as bread, milk, and canned foods are available for sale. They may also prepare food such as sandwiches, chicken, jo jos, or hot dogs, and occasionally fill a customer's propane tank, and offer automobile or truck washing services, all of which is included within the scope of this classification.

This classification excludes establishments which provide any full service or limited services in addition to self-service operations at the same location which are to be reported separately in classification 3406; establishments which provide only self-service gasoline operations and whose grocery items are limited to prepared snack foods such as chips and candy, and cigarettes which are to be reported separately in classification 3409; and convenience stores with no gasoline services which are to be reported separately in classification 6403.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-58502, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-58502, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 93-12-093, § 296-17-58502, filed 5/31/93, effective 7/1/93.]

WAC 296-17-58505 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-17-615 Classification 3902.**3902-00 Fruit and vegetable: Cannery and freezer operations**

Applies to establishments engaged in fruit and vegetable canning or freezing operations for wholesale customers. Operations contemplated by this classification include the receipt of fruit and vegetables directly from growers or dealers, preparing produce for canning by removing foreign materials such as leaves or weeds, washing, sterilizing, grading, peeling, slicing, coring, blanching, scalding and pre-cooking, premeasuring, mixing them in a hopper with sugar or other ingredients, and further processing into canned or frozen products. Pea vining, when performed by employees of a cannery, is also included in this classification.

This classification excludes establishments engaged in evaporating, preserving or dehydrating fruits and vegetables which are to be reported separately in classification 3902-01; establishments engaged in manufacturing fruit juice, cider, jam or jelly which are to be reported separately in classification 3902-02; establishments engaged in packing *fresh* vegetables and fruits which are to be reported separately in classification 2104; and pea vining when done by employees of farm operations or farm labor contractors which is to be reported separately in the applicable farm classification.

2104; and pea vining when done by employees of farm operations or farm labor contractors which is to be reported separately in the applicable farm classification.

3902-01 Fruit and vegetable: Evaporating, preserving or dehydrating

Applies to establishments engaged in evaporating, preserving, or dehydrating fruits and vegetables for wholesale customers. Operations contemplated by this classification include the receipt of fruit and vegetables directly from growers or dealers, washing, peeling, cooking, pressing fruits and vegetables by machine, adding preservatives and congealants, pasteurizing, then dehydrating, drying, or evaporating to remove the moisture which preserves the fruits and vegetables and leaves only the dry, solid portion. Finished products are packaged in cans, plastic bags, or boxes for shipping.

This classification excludes establishments engaged in canning or freezing of fruits and vegetables which are to be reported separately in classification 3902-00; establishments engaged in manufacturing fruit juice, cider, jam or jelly which are to be reported separately in classification 3902-02; establishments engaged in packing fresh vegetables and fruits which are to be reported separately in classification 2104; and farm operations which are to be reported separately in the applicable farm classification.

3902-02 Fruit syrup or juice, cider, jam or jelly: Manufacturing

Applies to establishments engaged in the manufacture of fruit syrup, juice, cider, jam, or jelly. Operations contemplated by this classification include the receipt of fruit directly from growers or dealers, washing, peeling, and cooking the fruit, extracting juice and separating seeds from pulp with fruit presses or separators, adding sugars, congealants and preservatives, pasteurizing, blending juices to produce a variety of flavors, and further processing to produce bottled, canned, or concentrate products.

This classification excludes establishments engaged in canning or freezing of fruits and vegetables which are to be reported separately in classification 3902-00; establishments engaged in evaporating, preserving or dehydrating fruits and vegetables which are to be reported separately in classification 3902-01; and farm operations which are to be reported separately in the applicable farm classification.

3902-11 Chocolate, cocoa, corn products: Manufacturing

Applies to establishments engaged in the manufacture of cocoa or chocolate such as Dutch or sweet chocolate or of corn products such as, but not limited to, tortillas. Operations contemplated by this classification include receipt of corn and cocoa beans from growers or dealers, processing operations, testing, packaging and shipping. Foreign matter is removed from the cocoa beans and they are sorted, divided, cleaned, and roasted in ovens. Shells are cracked, usually by machines, and the beans examined to ensure quality. Depending on the products being manufactured, beans may be pasteurized, ground, further dried, mixed with chocolate liquor, sugar, powdered milk, cocoa butter, or potassium solutions to make into finished products. Depending on the corn product being made, ingredients are pressed, kneaded, cut, shaped or flattened, and baked or cooked.

This classification excludes establishments engaged in the manufacture of crackers, potato chips, ravioli, tamale, and pasta, or chocolate candy and confections which are to be reported separately in classification 3906, and farm operations which are to be reported separately in the applicable farm classification.

3902-12 Baking powder, dextrine, glucose and starch: Manufacturing

Applies to establishments engaged in the manufacture of baking powder, dextrine, glucose and starch. Operations contemplated by this classification include the receipt of vegetables and grains, such as, but not limited to, potatoes, corn, and wheat from growers or dealers, processing operations, testing, storing finished products in storage tanks, packaging into drums or cans, and shipping. Vegetables or grains are cleaned, sorted, and foreign matter removed. They are dumped onto conveyors and transported to grinding machines where they are ground into a starch paste. Water may be added to make liquid starch or starch milk or dryers may remove excess moisture. Starch blends may be made from raw starch suspensions using chemical solutions. Shakers remove bran, gluten or other particles from the starch suspension. Dextrine is made by further mixing the starch with dextrine paste, adding chemicals, cooking and stirring until the starch is converted to dextrine. Baking powder is made by mixing baking soda, starch, and an acid compound such as cream of tartar.

This classification excludes establishments engaged in the manufacture of food sundries not covered by another classification which are to be reported separately in classification 3902-14 and farm operations which are to be reported separately in the applicable farm classification.

3902-13 Nut shelling, egg breaking, coconut shredding and peanut handling

Applies to establishments engaged in nut shelling, egg breaking, coconut shredding, and peanut handling. Nuts are received from suppliers in bulk and placed into machinery which cracks shells and separates broken shells from the nut meat. Another machine sorts whole nut meats from those that are chipped, broken, or contaminated. At each machine, nuts are examined for rejects, and foreign matter is removed with a vacuum hose or by hand. They may be chopped, sliced, or left whole, then poured from the machines into sacks or containers. The meats of certain nuts, such as almonds, may be ground into meal, then canned for shipment. This classification also includes the grading and polishing of nuts, and shredding of coconuts. Egg breaking machines break eggs and separate the yolk from the white. They are observed for color, quantity, and clarity; inferior yolks or whites are discarded prior to being automatically dropped onto separator trays with individual cups. Eggs may then be mixed with water, pasteurized or dried prior to packaging.

This classification excludes establishments engaged in the manufacture of oils which are to be reported separately in classification 3902-27 and establishments engaged in the manufacture of food sundries which are to be reported separately in classification 3902-14.

3902-14 Food sundries, N.O.C.: Manufacturing or processing

Applies to establishments engaged in the manufacture of a variety of miscellaneous food products not covered by another classification (N.O.C.). Products include, but are not limited to, imitation crab, spices, peanut butter, condiments, salsa, salad dressings, mayonnaise, soups, tofu, instant potatoes, salads and certain ready-to-eat dishes that are usually sold to wholesale distributors. This classification also applies to the grinding and roasting of coffee beans. Operations contemplated by this classification include the receipt of raw ingredients from growers or dealers, processing operations, testing, quality control, laboratory operations, packaging and shipping. Individual processes, which vary depending on the product being manufactured, include, but are not limited to, cleaning, dividing, grinding, mixing, blending with other ingredients, cooking, cooling, dividing again into desired portions, and packaging. The products are packaged in plastic bags, bottles, or cans, usually by machine. Some products require vacuum sealing, pasteurizing, or freezing.

This classification excludes establishments engaged in the manufacture of crackers, potato chips, ravioli, tamale, pasta, cough drops, confectionery, and chewing gum which are to be reported separately in classification 3906 and farm operations which are to be reported separately in the applicable farm classification.

3902-15 Pickles and sauerkraut: Manufacturing

Applies to establishments engaged in the manufacture of pickles and sauerkraut. Operations contemplated by this classification include the receipt of produce from growers or dealers, processing operations, testing, laboratory operations, packaging and shipping. Produce, such as cucumbers and cabbage, is cleaned, cut, chopped and placed in barrels, vats, or tanks of brine (a mixture of salt, sugar, spices, vinegar) until cured. At the end of curing period, product may be packed into glass jars, plastic bags, or cans. This classification also applies to the pickling of fruits or vegetables such as, but not limited to, tomatoes, peppers, and asparagus.

This classification excludes establishments engaged in canning or freezing of fruits and vegetables which are to be reported separately in classification 3902-00; establishments engaged in evaporating, preserving or dehydrating fruits and vegetables which are to be reported separately in classification 3902-01; establishments engaged in packing fresh vegetables and fruits which are to be reported separately in classification 2104; and farm operations which are to be reported separately in the applicable farm classification.

3902-17 Pet food: Manufacturing

Applies to establishments engaged in the manufacture of canned pet foods. Operations contemplated by this classification include the receipt of raw ingredients, processing operations, packaging and shipping. After bones and foreign matter are removed, raw ingredients are cleaned and ground. Depending on the product, various ingredients such as, but not limited to, animal meat and fat, fish by-products, corn-meal, soybean meal, ground wheat, rice, poultry, yeast, whey, salt, acids, chemicals, minerals, vitamins, water, or oil are mixed in large vats either by machine or by hand. Mixture is baked, dried, and shaped or packed into cans.

This classification excludes establishments engaged in the manufacture of dry pet food which is to be reported separately in classification 2101 and farm operations which are to be reported separately in the applicable farm classification.

3902-24 Breakfast food: Manufacturing

Applies to establishments engaged in the manufacture of breakfast foods such as cereals or breakfast bars. Operations contemplated by this classification include the receipt of ingredients, processing operations, quality control, laboratory operations, packaging, and shipping. Flour, meal, or milled grains such as, but not limited to, corn, oats, barley, wheat, and nuts are mixed with other ingredients, formed into a dough, rolled out and extruded into flakes or other shapes. Pressure cylinders may be used to expand or puff whole grains. Cereals may be sifted through screens to check for size, color, and uniformity or otherwise tested for quality, then baked or dried in bulk prior to packaging.

This classification excludes establishments engaged in the manufacture of wholesale bakery goods which are to be reported separately in classification 3906; establishments engaged in milling or grinding operations which are to be reported separately in classification 2101; and farm operations which are to be reported separately in the applicable farm classification.

3902-26 Poultry canning and canneries, N.O.C.

Applies to establishments engaged in canning poultry or canning operations not covered by another classification (N.O.C.). Operations contemplated by this classification include the receipt of poultry or other products, processing operations, quality control, laboratory operations, packaging, and shipping. The process includes, but is not limited to, washing, cutting or chopping, and cooking poultry or other foods items. Preservatives or flavorings may be added before product is sealed in cans or jars.

This classification excludes establishments engaged in canning or freezing fruits or vegetables which are to be reported separately in classification 3902-00 and establishments engaged in canning or dehydrating meat products which are to be reported separately in classification 4301.

3902-27 Vegetable oil or butter substitutes: Manufacturing

Applies to establishments engaged in the manufacture of salad or vegetable oils, shortening, margarine or other butter substitutes. Operations contemplated by this classification include the receipt of seeds or beans from growers or through dealers, processing operations, quality control, laboratory operations, packaging and shipping. To make oils, soybeans, cottonseeds, safflower seeds, or shelled corn is cracked, ground, milled, steam cooked, and pressed to extract the oil. Depending on the product being made, other ingredients such as water, milk, powdered milk or salt may be blended with the oil, then heated, filtered, and filled into cans or bottles. To make shortening or butter substitutes, flavoring, catalytic agents, and chemicals are added to harden the oils; some products are kneaded to spread the coloring uniformly; then they are packaged in cans, plastic containers, or wrapped in plastic or foil. Machinery includes, but is not limited to, grinders, screens, presses, extractors, dryers, and conveyors.

This classification excludes establishments engaged in the manufacture of "real" butter which are to be reported separately in classification 4002 and farm operations which are to be reported separately in the applicable farm classification.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-615, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-615, filed 8/28/98, effective 10/1/98; 87-12-032 (Order 87-12), § 296-17-615, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-615, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-615, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-615, filed 11/29/82, effective 1/1/83; Order 75-38, § 296-17-615, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-615, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-615, filed 11/9/73, effective 1/1/74.]

WAC 296-17-647 Classification 4806.

4806-01 Farms: Nuts, berries, prunes, or field flowers and bulbs - hand harvesting

Applies to those employees of an employer who are engaged *exclusively* in hand harvesting nuts, berries, prunes, or field flowers or bulbs. This classification is limited to the harvest of crops which are picked from trees or from the ground, by hand and by a worker either sitting, kneeling, bending, stooping, or standing on the ground. This classification excludes any operation where ladders, stools, or other climbing devices are used; all operations where harvesting is accomplished or aided with hand held cutting devices or tools, and any mechanical picking or harvesting equipment including incidental workers who may or may not follow behind such machinery and collect the harvested crops by hand; the picking of wild berries or other products in forests or other lands not associated with farming operations; and contractors hired by a farm operator to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special note: Classification 4806 is not to be assigned to any grower as the single farming classification. Refer to classification 4802 for berry or flower and bulb raising operations and to classification 4803 for orchard operations.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-647, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-647, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-647, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-647, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-647, filed 11/30/83, effective 1/1/84; Order 76-36, § 296-17-647, filed 11/30/76; Order 75-38, § 296-17-647, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-647, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-647, filed 11/9/73, effective 1/1/74.]

WAC 296-17-649 Classification 4808.

4808-01 Farms: Diversified field crops

Applies to establishments engaged in growing a variety of grain, vegetable, or grass crops during a single season. Work contemplated by this classification includes, but is not limited to, preparing the soil for new crops, planting, fertilizing, weeding, harvesting, and maintaining or installing sprinkler or irrigation systems. Any subsequent grading, sorting, packing and shipping of farm products grown subject to this classification is included within the scope of this classification. This classification includes roadside stands operated at or near the farm and farm store operations where a small

stock of products not produced by the operation subject to this classification may also be offered for sale. Farms operating multiple retail locations, such as those found in parking lots of shopping centers or at farmer's markets, may qualify to have those activities reported separately provided all the conditions of the general reporting rules covering the operation of a secondary business are met. Typical crops include the following:

Alfalfa	Garlic	Potatoes
Barley	Grain	Rye
Beans, Dry	Grass Seed	Sugar Beets
Clover	Hay	Timothy
Corn	Peas, Dry	Wheat

This classification excludes fresh vegetable packing operations which are to be reported separately in classification 2104; cannery or freezer operations which are to be reported separately in classification 3902; establishments engaged exclusively in the sale of fresh vegetables who are not involved in the cultivation of plants which are to be reported separately in classification 6403; and contractors hired by a farm operator to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special note: This classification differs from classification 4802 "vegetable farm operations" in that vegetable crops grown subject to classification 4808 generally have a long growing season and are harvested upon reaching maturity at the end of the season. Vegetable crops grown in classification 4802 are generally planted so that harvesting will occur continuously over the season and in smaller quantities. See classification 4802-12 for additional information. The term "farm labor contractor" applies to specialty contractors who supply laborers to a farm operation for specified services such as weeding, planting, irrigating and fertilizing. Generally the work involves manual labor tasks as opposed to machine operations. These farm labor contractors are to be reported in the classification that applies to the farm they are contracting with. Contractors who provide both equipment or machinery and the machine operators are to be reported in classification 4808 "custom farm services" as the process involved in operating machinery is the same irrespective of the type of farm they are providing service to or the type of crop involved.

4808-02 Farms: Alfalfa, clover and grass seed

Applies to establishments engaged exclusively in raising alfalfa, clover, and grass crops for seed. Work contemplated by this classification includes, but is not limited to, preparing soil for crops, planting, fertilizing, machine harvesting, maintaining or installing sprinkler or irrigation systems, and drying of seed. Any subsequent grading, sorting, packing and shipping of seeds is included within the scope of this classification. Also included is the incidental sale of farm products from roadside stands operated at or near the farm and farm store operations where a small stock of products not produced by the operation subject to this classification may also be offered for sale.

This classification excludes establishments engaged in grading, sorting, and packaging seeds; or selling baled alfalfa

or clover who are not engaged in growing operations which are to be reported separately in classification 2101; establishments engaged exclusively in grain or seed storage who are not engaged in growing operations which are to be reported separately in classification 2007; and contractors hired by a farm operator to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special note: The term "farm labor contractor" applies to specialty contractors who supply laborers to a farm operation for specified services such as weeding, planting, irrigating and fertilizing. Generally the work involves manual labor tasks as opposed to machine operations. These farm labor contractors are to be reported in the classification that applies to the farm they are contracting with. Contractors who provide both equipment or machinery and the machine operators are to be reported in classification 4808 "custom farm services" as the process involved in operating machinery is the same irrespective of the type of farm they are providing service to or the type of crop involved.

4808-04 Farms: Hay

Applies to establishments engaged exclusively in raising hay or straw grass for sale, and includes the raising of such crops for seed. Work contemplated by this classification includes, but is not limited to, preparing soil for crops, planting, fertilizing, machine harvesting, maintaining or installing sprinkler or irrigation systems, and drying of seed. Any subsequent grading, sorting, packing and shipping of seeds is included within the scope of this classification. Also included is the incidental sale of farm products from roadside stands operated at or near the farm and farm store operations where a small stock of products not produced by the operation subject to this classification may also be offered for sale.

This classification excludes establishments engaged in grading, sorting, and packaging seeds, or selling baled hay who are not engaged in growing operations which are to be reported separately in classification 2101 and contractors hired by a farm operator to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special note: The term "farm labor contractor" applies to specialty contractors who supply laborers to a farm operation for specified services such as weeding, planting, irrigating and fertilizing. Generally the work involves manual labor tasks as opposed to machine operations. These farm labor contractors are to be reported in the classification that applies to the farm they are contracting with. Contractors who provide both equipment or machinery and the machine operators are to be reported in classification 4808 "custom farm services" as the process involved in operating machinery is the same irrespective of the type of farm they are providing service to or the type of crop involved.

4808-06 Farms: Cereal grain

Applies to establishments engaged in growing cereal grain crops. Work contemplated by this classification includes, but is not limited to, preparing the soil for new crops, planting, fertilizing, weeding, harvesting, and maintaining or installing sprinkler or irrigation systems. Any subsequent grading, sorting, packing and shipping of farm prod-

ucts grown subject to this classification is included within the scope of this classification. Also included is the incidental sale of farm products from roadside stands or operated at or near the farm and farm store operations where a small stock of products not produced by the operation subject to this classification may also be offered for sale. Typical cereal grain crops include the following:

Barley	Rye
Corn	Wheat

This classification excludes contractors hired by a farm operator to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special notes: See classification 4802-12 for additional information relative to corn. The term "farm labor contractor" applies to specialty contractors who supply laborers to a farm operation for specified services such as weeding, planting, irrigating and fertilizing. Generally the work involves manual labor tasks as opposed to machine operations. These farm labor contractors are to be reported in the classification that applies to the farm they are contracting with. Contractors who provide both equipment or machinery and the machine operators are to be reported in classification 4808 "custom farm services" as the process involved in operating machinery is the same irrespective of the type of farm they are providing service to or the type of crop involved.

4808-07 Potato sorting and storage

Applies to establishments engaged in storing potatoes in storage warehouses or cellars. Work contemplated by this classification is limited to sorting the good potatoes from damaged ones or from debris such as vines or rocks, piling them into the storage area by size, and storing them until they are taken to processing or packing plants. Sorting may be done either in the field or at a storage warehouse. This classification also includes potato digging and piling when performed by employees of an employer engaged in storing potatoes but who is not engaged in growing potatoes.

This classification excludes fresh vegetable packing operations which are to be reported separately in classification 2104; cannery or freezer operations which are to be reported separately in classification 3902; potato chip manufacturing which is to be reported separately in classification 3906; establishments engaged exclusively in the sale of fresh vegetables who are not involved in the cultivation of plants which are to be reported separately in classification 6403; and contractors hired by a farm operator to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special note: The farm labor contractor provision is not applicable to this classification as such establishments are not engaged in a farming operation.

4808-08 Custom hay baling

Applies exclusively to a specialist farm labor contractor engaged in mowing, turning, and baling hay owned by others. This classification also includes the incidental loading of hay onto trucks and stacking of hay in a barn or warehouse when

performed by employees of a specialist farm labor contractor engaged in mowing, turning, and baling hay for others.

Special note: The farm labor contractor provision is not applicable to this classification as such establishments are not engaged in a farming operation.

4808-10 Farms: Shellfish - mechanical harvesting

Applies to establishments engaged in the propagation of shellfish for sale and includes the subsequent harvest of shellfish by means of mechanical dredging operations. Work contemplated by this classification includes spawning of shellfish, seeding in controlled tanks, placement of shellfish into deep water growing beds, harvesting, and processing. Harvesting, processing, and packing of shellfish by a farm labor contractor is included in this classification provided that the shellfish being harvested were grown by an establishment subject to this classification. This classification includes the sale of shellfish at roadside stands operated at or near the business location and store operations where a small stock of products not produced by the operation subject to this classification may also be offered for sale. Businesses operating multiple retail locations may qualify to have those activities reported separately if all the conditions of the general reporting rule covering the operation of a secondary business have been met.

This classification excludes establishments engaged in the harvesting, processing or packaging of shellfish obtained from natural areas where the husbandry of the resource is not an integral part of the operation which are to be reported separately in classification 3304 and contractors hired by a shellfish grower to install, repair or build any farm equipment or structures who are to be reported separately in the classification applicable to the work being performed.

Special note: The distinction between establishments assigned to classification 4808 and those which are to be reported separately in classification 4805 is in the harvesting process. Establishments subject to classification 4805 are engaged in hand harvesting activities which includes the use of hand held tools while those assigned to classification 4808 are engaged in mechanical harvesting activities by way of dredging operations. The term "farm labor contractor" applies to specialty contractors who supply laborers to a farm operation for specified services such as seeding of larvae to mother shells and planting shells to natural waters. Generally the work involves manual labor tasks as opposed to machine operations. These farm labor contractors are to be reported in the classification that applies to the farm they are contracting with. Contractors who provide both equipment or machinery and the machine operators are to be reported in classification 4808 "custom farm services" as the process involved in operating machinery is the same irrespective of the type of farm they are providing service to.

4808-11 Custom farm services by contractor

Applies exclusively to contractors engaged in supplying and operating agricultural machinery and equipment at their customer's locations. Work contemplated by this classification involves preparing fields for crops, planting and cultivating crops, fertilizing, and harvesting operations using machinery and equipment such as, but not limited to, tractors, plows, fertilizer spreaders, combines, reapers, potato diggers,

boom loaders and pickers. Contractors subject to this classification are generally not responsible for the overall care of the crops, but are merely hired to provide specified services, which involve the use of machinery and employee equipment operators. This classification also includes seasonal agricultural produce hauling from the field to a processing or storage plant when performed by employees of an employer not engaged in the related farming operations associated with the crop being hauled.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-649, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-649, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-649, filed 5/31/96, effective 7/1/96; 87-12-032 (Order 87-12), § 296-17-649, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-649, filed 11/27/85, effective 1/1/86; 85-12-024 (Order 85-11), § 296-17-649, filed 5/31/85; 85-06-026 (Order 85-7), § 296-17-649, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-649, filed 11/30/83, effective 1/1/84; Order 75-38, § 296-17-649, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-649, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-649, filed 11/9/73, effective 1/1/74.]

WAC 296-17-653 Classification 4904.

4904-00 Clerical office, N.O.C.

Applies to those employees whose job duties and work environment meet *all* the conditions of the general reporting rules covering clerical office standard exception employees who are not covered by another classification (N.O.C.) assigned to their employer's account. Duties of clerical office personnel contemplated by this classification are limited to answering telephones, handling correspondence, creating or maintaining financial, employment, personnel or payroll records, composing informational material on a computer, creating or maintaining computer software, and technical drafting.

Special note: When considering this classification, care must be taken to look beyond titles of employees. Employees with occupational titles such as, but not limited to, cashiers, clerks, or ticket sellers, may or may not qualify for this classification. This is a restrictive classification; the qualifying factor is that all the conditions of the general reporting rules covering standard exception employees have been met.

4904-13 Clerical office: Insurance companies, agents or brokers

Applies to clerical office employees of insurance companies, including insurance agents or brokers who perform duties exclusively of clerical nature and without an interchange of labor between clerical and nonclerical duties. This classification is limited to duties defined as responding to telephone inquiries, assisting walk-in customers, handling correspondence such as the preparation of insurance policies and billing, receiving and processing payments and invoices, maintaining personnel and payroll records, and performing the necessary computer work.

Special note: Individuals performing duties as an agent, broker, or solicitor (and hold a license as issued by the office of the insurance commissioner) are exempt from coverage as specified in RCW 51.12.020(11) and 48.17.010, 48.17.020, and 48.17.030. To elect voluntary coverage these individuals must submit a completed optional coverage form to the department. In addition, care should be exercised to determine if the insurance company employs individuals such as

receptionists, bookkeepers, or claims clerks who perform clerical duties which may include the incidental taking of insurance applications and receiving premiums in the office of an agent or broker. Such individuals may or may not hold a license as issued by the office of the insurance commissioner, and are not deemed to be a solicitor, agent or broker when compensation is not related to the volume of such applications, insurance, or premiums. In these instances, the clerical individuals fall under mandatory workers' compensation coverage, and do not meet the requirements to be exempt from coverage as specified in RCW 51.12.020(11).

4904-17 Clerical office: Employee leasing companies

Applies to clerical office employees of employee leasing companies. This classification requires that clerical office employees perform duties exclusively of a clerical nature, without an interchange of labor between clerical and nonclerical duties, and that these duties be performed in an area or areas separated from the operative hazards of the business. This classification is limited to duties defined as responding to telephone inquiries, receptionist and administrative duties, handling correspondence such as preparing and processing billing statements and forms, maintaining personnel and payroll records, and performing the necessary computer entry work.

Special note: This is a standard exception classification and is not to be assigned unless all the conditions of the general reporting rule covering clerical office standard exception employees have been met.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-653, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-653, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-653, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-653, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-653, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-653, filed 11/9/73, effective 1/1/74.]

WAC 296-17-675 Classification 5206.

5206-78 Permanent yard or shop operations; logging or log hauling contractor

Applies to a permanent yard or shop of logging or log hauling contractors. This classification is limited to contractor yards and shops which are maintained exclusively for the storage of materials and maintenance of equipment used in their logging and/or log hauling business. This classification does not contemplate any manufacturing operations. Only employees of a logging or log hauling contractor who are assigned to the shop or yard are to be reported in this classification. This classification is further restricted in that employees reported in classification 5206-78 cannot have any other duties other than those related to the storage of materials and/or the maintenance of equipment during their work shift or work day. Any employee having any other duties during their assigned work shift or day are to be reported separately in the applicable logging or log hauling classification.

Special note: Under no circumstances can this be the only classification assigned to an employer.

5206-79 Permanent yard or shop operations; Construction or erection contractor

Applies to a permanent yard or shop of construction or erection contractors. This classification is limited to contrac-

tor yards and shops which are maintained exclusively for the storage of materials and maintenance of equipment used in their construction business. This classification does not contemplate any manufacturing operations. For example, a contractor engaged in cabinet manufacturing and installation is to report the shop and yard operation in classification 2907 and is not entitled to classification 5206. Only employees of a construction or erection contractor who are assigned to the shop or yard are to be reported in this classification. This classification is further restricted in that employees reported in classification 5206-79 cannot have any duties other than those related to the storage of materials and/or the maintenance of equipment during their work shift or work day. Any employee having any other duties during their assigned work shift or day are to be reported separately in the applicable construction classification.

Special note: Under no circumstances can this be the only classification assigned to an employer.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-675, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-675, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-675, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-675, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-675, filed 11/29/82, effective 1/1/83; 80-17-016 (Order 80-23), § 296-17-675, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 78-12-043 (Order 78-23), § 296-17-675, filed 11/27/78, effective 1/1/79; Order 76-36, § 296-17-675, filed 11/30/76; Order 73-22, § 296-17-675, filed 11/9/73, effective 1/1/74.]

WAC 296-17-678 Classification 5305.

5305-06 Clerical office, administrative employees, and elected officials of cities and towns

Applies to clerical office, administrative employees, and elected officials of cities and towns. Clerical duties include, but are not limited to, answering telephones, handling correspondence, computer work, and maintaining financial, personnel and payroll records. A clerical office is a work area which is physically separated from all other work areas by walls, partitions or other physical barriers and must be free from all operative hazards of the work environment. Administrative duties may be conducted in or out of the city or town facilities, but are conducted in an atmosphere free from the operative hazards of the work environment associated with operations such as, but not limited to, jails, law enforcement and road works. In addition to management activities, this classification also includes field auditors, social workers or similar activities professionals would perform.

See classifications 0803, 1301, 1404, 6901, 6904, 6905 and 6906 for other city or town operations.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-678, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-678, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-678, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-678, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-678, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-678, filed 11/9/73, effective 1/1/74.]

WAC 296-17-679 Classification 5306.

5306-07 Clerical office, administrative employees, and elected officials of counties, public utility districts and taxing districts, N.O.C.

Applies to clerical office, administrative employees, and elected officials of counties, public utility districts and taxing districts, not otherwise classified (N.O.C.). Clerical duties include, but are not limited to, answering telephones, handling correspondence, computer work, and maintaining financial, personnel and payroll records. A clerical office is a work area which is physically separated from all other work areas by walls, partitions or other physical barriers and must be free from all operative hazards of the work environment associated with operations such as, but not limited to, jails, law enforcement and road works. Administrative duties may be conducted in or out of the county, public utility district or taxing district facilities, but are conducted in an atmosphere free from the operative hazards of the work environment. In addition to management activities, this classification also includes field auditors, social workers, alcohol and drug abuse programs, senior health and nutrition programs, medical and dental clinics or similar activities professionals would perform.

See classifications 1301, 1404, 1501, 1507, 4201, 6103, 6104, 6901, 6904, 6905, and 6906 for other county, public utility districts and taxing districts operations.

5306-25 Clerical office and administrative employees of Native American tribal councils

Applies to clerical office and administrative employees of Native American tribal councils. Clerical duties include, but are not limited to, answering telephones, handling correspondence, computer work, and maintaining financial, personnel and payroll records. A clerical office is a work area which is physically separated from all other work areas by walls, partitions or other physical barriers and must be free from all operative hazards of the work environment. Administrative duties may be conducted in or out of the tribal council facilities, but are conducted in an atmosphere free from the operative hazards of the work environment associated with operations such as, but not limited to, jails, law enforcement and road works. In addition to management activities, this classification also includes field auditors, social workers, alcohol and drug abuse programs, senior health and nutrition programs, youth services, counselors, courts, medical and dental clinics or similar activities professionals would perform.

See classifications 1501 and 6905 for other Native American tribal council operations.

Special note: Tribal operations unrelated to the business of governing such as liquor and tobacco stores, casinos, logging, fisheries and bingo parlors are to be reported separately in the classification applicable to the operation.

5306-26 Clerical office and administrative employees of local public housing authorities

Applies to clerical office and administrative employees of local public housing authorities. Clerical duties include, but are not limited to, answering telephones, handling correspondence, computer work, and maintaining financial, personnel and payroll records. A clerical office is a work area which is physically separated from all other work areas by walls, partitions or other physical barriers and must be free from all operative hazards of the work environment. Administrative duties may be conducted in or out of the housing

authority facilities, but are conducted in an atmosphere free from the operative hazards of the work environment associated with operations such as, but not limited to, jails, law enforcement and road works. In addition to management activities, this classification also includes field auditors, social workers or similar activities professionals would perform.

This classification excludes all other employees including meter readers who are to be reported separately in classification 1501 and volunteers who are to be reported separately in classifications 6901 or 6906 as appropriate.

5306-27 Clerical office and administrative employees of military base maintenance contractors

Applies to clerical office and administrative employees of military base maintenance contractors. Clerical duties include, but are not limited to, answering telephones, handling correspondence, computer work, and maintaining financial, personnel and payroll records. A clerical office is a work area which is physically separated from all other work areas by walls, partitions or other physical barriers, and must be free from all operative hazards of the work environment. Administrative duties may be conducted in or out of the military base facilities, but are conducted in an atmosphere free from the operative hazards of the work environment associated with operations such as, but not limited to, jails, law enforcement and road works. In addition to management activities, this classification also includes field auditors, social workers or similar activities professionals would perform.

See classification 1501 for other military base maintenance contractors' operations.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-679, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-679, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 90-13-018, § 296-17-679, filed 6/8/90, effective 7/9/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-679, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-679, filed 2/28/85, effective 4/1/85; Order 73-22, § 296-17-679, filed 11/9/73, effective 1/1/74.]

WAC 296-17-686 Classification 6109.

6109-00 Physicians, surgeons, and medical clinics, N.O.C.

Applies to establishments of licensed practitioners such as physicians and surgeons, and to medical clinics not covered by another classification (N.O.C.) engaged in the practice of general or specialized medicine and surgery. Physicians diagnose and treat a variety of diseases and injuries, order or execute various tests, analyses, and diagnostic images to provide information on a patient's condition, analyze reports and findings of tests and of examination, diagnose conditions, and administer or prescribe treatments and drugs. Physicians may also inoculate and vaccinate patients to immunize them from communicable diseases, or refer patients to a medical specialist or other practitioners for specialized treatment. They may also make house and emergency calls to attend to patients unable to visit the office. Surgeons examine patients to verify necessity of surgery, review reports of patient's general physical condition and medical history, reactions to medications, estimate possible risk to patient, and determine best operational procedure. Surgeons may specialize in a particular type of surgery. This

classification includes licensed ophthalmologists who specialize in the diagnosis and treatment of diseases and injuries of the eyes, and examine patients for symptoms indicative of organic or congenital ocular disorders. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the physician's or surgeon's office or in a medical clinic, such as laboratory or X-ray technicians, and nurses.

This classification excludes psychologists and psychiatrists who are to be reported separately in classification 6109-10; optometrists who are to be reported separately in classification 6109-09; radiology and MRI referral clinics which are to be reported separately in classification 6109-17; orthotic referral clinics which are to be reported separately in classification 6109-14; and nutrition, diet, or weight loss clinics which are to be reported separately in classification 6109-12.

6109-01 Dentists and dental clinics

Applies to establishments of licensed dental practitioners and dental clinics engaged in the practice of general or specialized dentistry. Services provided by dental offices or clinics include, but are not limited to, examination of teeth and gums to determine condition, diagnosis of disease, injuries, or malformation, extractions, fillings, root canals, oral surgery, tooth replacement, cleaning, instruction on oral and dental hygiene and preventative care. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the dentist's office such as hygienists, and dental assistants or technicians.

6109-02 Chiropractors, N.O.C.

Applies to establishments of licensed practitioners not covered by another classification (N.O.C.) who are engaged in the practice of chiropractic medicine. Chiropractors diagnose and treat musculoskeletal conditions of the spinal column and extremities to prevent disease and correct abnormalities of the body believed to be caused by interference with the nervous system. They manipulate the spinal column and other extremities to adjust, align, or correct abnormalities caused by neurologic and kinetic articular dysfunction. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the chiropractor's office.

6109-04 Naturopaths, N.O.C.

Applies to establishments of health practitioners not covered by another classification (N.O.C.) who diagnose, treat, and care for patients, using a system of practice that bases treatment of physiological functions and abnormal conditions on natural laws governing the human body, relying on natural remedies such as, but not limited to, acupuncture, sunlight supplemented with diet, and naturopathic corrections and manipulations to treat the sick. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the naturopath's office.

6109-08 Physical therapists, N.O.C.

Applies to establishments of health practitioners not covered by another classification (N.O.C.) who are engaged in the practice of physical therapy, occupational therapy, respiratory therapy, or speech therapy. Therapists treat and rehabilitate people with physical or mental disabilities or disor-

ders, to develop or restore functions, prevent loss of physical capacities, and maintain optimum performance. Includes occupations utilizing means such as exercise, massage, heat, light, water, electricity, and specific therapeutic apparatus, usually as prescribed by a physician; or participation in medically oriented rehabilitative programs, including educational, occupational, and recreational activities. *Physical therapists* plan and administer medically prescribed physical therapy treatment for patients suffering from injuries, or muscle, nerve, joint and bone diseases, to restore function, relieve pain, and prevent disability. *Occupational therapists* plan, organize, and conduct occupational therapy programs to facilitate development and rehabilitation of the mentally, physically, or emotionally handicapped. *Respiratory therapists* administer respiratory therapy care and life support to patients with deficiencies and abnormalities of the cardiopulmonary system, under the supervision of physicians and by prescription. *Speech therapists* specialize in diagnosis and treatment of speech and language problems, and engage in scientific study of human communication. This classification includes clerical office and sales personnel, as well as other employees engaged in therapy services and also includes travel to health facilities or other locations to administer therapy services.

6109-09 Optometrists, N.O.C.

Applies to establishments of optometrists not covered by another classification (N.O.C.). Optometrists are licensed practitioners, but do not hold a medical degree. An optometrist in general practice examines patients' eyes to determine the nature and degree of vision problems or eye diseases and prescribes corrective lenses or procedures, performs various tests to determine visual acuity and perception and to diagnose diseases and other abnormalities, such as glaucoma and color blindness. An optometrist may specialize in the type of services provided, such as contact lenses, low vision aids, or vision therapy, or in the treatment of specific groups such as children or elderly patients. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the optometrist's office.

This classification excludes optometrists employed by optical goods stores who are to be reported separately in classification 6308, and ophthalmologists who are to be reported separately in classification 6109-00.

6109-10 Psychologists and psychiatrists, N.O.C.

Applies to establishments of licensed practitioners not covered by another classification (N.O.C.) who are engaged in the diagnoses and treatment of patients with mental, emotional, or behavioral disorders. *Psychologists* are licensed practitioners who diagnose or evaluate mental and emotional disorders of individuals and administer programs of treatment. They interview patients in clinics, hospitals, prisons, and other institutions, and study medical and social case histories. *Psychiatrists* are licensed practitioners who diagnose and treat patients with mental, emotional, and behavioral disorders. They organize data obtained from the patient, relatives, and other sources, concerning the patient's family, medical history, and the onset of symptoms, and determine the nature and extent of mental disorder and formulate a treat-

ment program utilizing a variety of psychotherapeutic methods and medications. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the doctor's office.

6109-12 Nutrition, diet, or weight loss clinics, N.O.C.

Applies to establishments engaged as nutrition, diet, or weight loss clinics not covered by another classification (N.O.C.) which provide programs whereby clients may achieve a healthy and permanent weight loss. The programs vary in approaches but most are based on the behavior modification theory, utilizing private counseling or group support meetings and seminars to educate individuals about their eating habits and proper eating patterns. Some programs may sell vitamin supplements or a line of food products to be used by their clients and may publish newsletters or other forms of literature for the benefit of their clients. This classification includes clerical office and sales personnel.

This classification excludes exercise programs which are to be reported separately in the appropriate classification.

6109-13 Childbirth classes

Applies to establishments providing childbirth education for expectant parents. Topics include, but are not limited to, expectations during pregnancy, breathing and relaxing techniques, and massage therapy. Literature and/or movies may be provided in addition to oral instruction. This classification includes clerical office and sales personnel.

6109-14 Orthotic referral clinics

Applies to establishments operating as clinics to provide care to patients with disabling conditions of the limbs and spine by fitting and preparing orthopedic braces under the direction of and in consultation with physicians. Orthotists examine and evaluate the patient's needs in relation to disease and functional loss, and assist in the design of an orthopedic brace. Orthotist select materials, makes cast measurements, model modifications and layouts. When the brace is finished, they evaluate it on the patient, make adjustments to ensure correct fit, and instruct the patient in the use of the orthopedic brace. This classification also includes clinics of prosthetists who provides care to patients with partial or total absence of a limb by planning fabrication of, writing specifications for, and fitting the prosthesis under the guidance of and in consultation with a physician. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the referral clinics.

This classification excludes the manufacture of orthopedic braces, splints or prostheses which is to be reported separately in the applicable classification.

6109-15 Midwife services

Applies to establishments engaged in the practice of midwifery. Midwives provide care for women undergoing medically uncomplicated pregnancy and low risk labor and delivery. The delivery may take place in a clinic setting or in the expectant mother's home. This classification includes clerical office and sales personnel.

6109-16 Licensed massage therapy services

Applies to establishments of licensed practitioners who are engaged in the practice of massage therapy. Some mas-

sage therapists work in conjunction with physicians or sports teams, or at hospitals, rehabilitation facilities or convalescent homes. If a client is referred by a physician, the therapist will review the medical report and in conjunction with the client, will determine the nature of the massage (whether it is for relaxation or to correct or relieve a medical problem) and the modality to be used, such as deep-muscle work, trigger-point therapy, or joint rotation. This classification includes clerical office and sales personnel as well as other employees engaged in licensed massage therapy services.

This classification excludes massage therapists employed by a health club, gymnasium, and unlicensed massage therapists employed by a sauna, or bath house who are to be reported separately in classification 6204.

6109-17 Radiology and MRI referral clinics

Applies to establishments of licensed practitioners who are engaged in the practice of radiology and/or magnetic resonance imaging. Radiologists diagnose and treat diseases of the human body using X-ray and radioactive substances. They examine the internal structures and functions of the organ systems and make diagnoses after correlating the X-ray findings with other examinations and tests. They administer radiopaque substances by injection, orally, or as enemas, to render internal structures and organs visible on X-ray films or fluoroscopic screens. Radiologists may employ magnetic resonance imaging technologists to operate magnetic resonance imaging equipment which produces cross-sectional images (photographs) of a patient's body for diagnostic purposes. This classification includes clerical office and sales personnel, as well as other employees engaged in service in the clinics, such as nurses or technologists.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-686, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-686, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 94-12-063, § 296-17-686, filed 5/30/94, effective 6/30/94; 93-12-093, § 296-17-686, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-24-060 (Order 87-26), § 296-17-686, filed 12/1/87, effective 1/1/88; 87-12-032 (Order 87-12), § 296-17-686, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-686, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-686, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-686, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-686, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-686, filed 11/9/73, effective 1/1/74.]

WAC 296-17-693 Classification 6207.

6207-00 Carnivals - traveling

Applies to those employees of an employer engaged in operating traveling carnivals, who are drivers and/or engaged in the set up and/or tear down of mechanical and nonmechanical amusement rides, and any temporary structure associated with a traveling carnival such as, but not limited to, game, food, or souvenir concession booths, mobile offices, aid rooms or ticket booths.

This classification excludes clerical office employees who are assigned to a permanent office location with no outside duties who may be reported separately in classification 4904 provided all the conditions of the general reporting rules covering standard exception employees have been met; clerical employees who travel with the carnival or with ride operators and who work out of a mobile office, ride operators, game attendants, ticket sellers/takers and personnel

involved in the care, custody, and maintenance of carnival facilities who are to be reported separately in classification 6208; establishments engaged in operating mechanical or nonmechanical rides at a permanent location which are to be reported separately in classification 6208; and establishments engaged in operating video or amusement game arcades at a permanent location, not within or operated in connection with an amusement park, which are to be reported separately in classification 6406.

Special note: Permanent shop employees, and those employees assigned to the shop during the winter quartering period may be reported separately in classification 5206 provided the conditions set forth in WAC 296-17-675 have been met.

6207-01 Circuses - traveling

Applies to establishments engaged in operating a traveling circus. Work contemplated by this classification includes all preparations, operations and maintenance normally performed by employees of an employer having operations subject to this classification. Employments include, but are not limited to, drivers, trainers, performers, ticket sellers/takers, clerical staff who travel with the circus, set up/tear down of mechanical and nonmechanical rides, concession booths or stands, mobile offices, aid rooms, ticket booths and all other temporary structures associated with a traveling circus.

This classification excludes clerical office employees who are assigned to a permanent office location with no outside duties, who may be reported separately in classification 4904 provided all the conditions of the general reporting rules covering standard exception employees have been met.

Special note: Classifications 6208 and 5206 do not apply to circus operations.

6207-02 Amusement rides - traveling

Applies to establishments engaged in operating mechanical or nonmechanical amusement rides. Employments contemplated by this classification include, but are not limited to, drivers and all employees engaged in the set up and tear down, operation, and maintenance of mechanical and nonmechanical rides and all other temporary structures associated with the amusement rides. This classification also includes automobile stunt shows, such as monster trucks or motorcycle car jumps, that perform for entertainment purposes. Covered employments associated with automobile stunt shows include, but are not limited to, drivers, mechanics, and maintenance employees who set up and take down ramps or other structures used in the show.

This classification excludes clerical office employees who are assigned to a permanent office location with no outside duties, who may be reported separately in classification 4904 provided all the conditions of the general reporting rule covering standard exception employees have been met; clerical employees who travel with the amusement operations and work out of a mobile office, ride operators, attendants, ticket sellers/takers, and personnel involved in the care, custody, and maintenance of amusement facilities who may be reported separately in classification 6208; employers engaged in operating mechanical or nonmechanical rides at a permanent location which are to be reported separately in classification 6208; and establishments engaged in operating

video or amusement game arcades at a permanent location, not within or operated in connection with an amusement park, which are to be reported separately in classification 6406.

Special note: Permanent shop employees, and those employees assigned to the shop during the winter quartering period, may be reported separately in classification 5206 provided the conditions set forth in WAC 296-17-675 have been met.

6207-03 Rodeos

Applies to establishments engaged in the production of rodeos. Employments contemplated by this classification include all operations normally performed by employees of an employer having operations subject to this classification such as, but not limited to, drivers and all arena employees, setting up/tearing down temporary enclosures/structures/bleachers, clowns, gate openers, animal handlers, ticket sellers/takers, first aid staff, and clerical staff who travel with the rodeo.

This classification excludes clerical office employees who are assigned to a permanent office location with no outside duties, who may be reported separately in classification 4904 provided all the conditions of the general reporting rule covering standard exception employees have been met; and stock handlers who contract with a rodeo producer to supply horses, bulls, or other rodeo animals, who are to be reported separately in classification 7302.

Special note: Classifications 6208 and 5206 do not apply to rodeos.

6207-04 Fireworks exhibition

Applies to establishments engaged in producing pyrotechnic exhibitions. This classification includes purchasing ready made fireworks, setting up displays, timing fuses, lighting the fireworks, and cleaning up.

This classification excludes establishments engaged in the manufacture of fireworks which are to be reported separately in classification 4601.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-693, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-693, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-693, filed 5/31/96, effective 7/1/96; 86-12-041 (Order 86-18), § 296-17-693, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-693, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-693, filed 2/28/85, effective 4/1/85; Order 77-27, § 296-17-693, filed 11/30/77, effective 1/1/78; Order 73-22, § 296-17-693, filed 11/9/73, effective 1/1/74.]

WAC 296-17-698 Classification 6303.

6303-00 Outside sales personnel, N.O.C.; messengers

Applies to those employees whose job duties and work environment meet *all* the conditions of the general reporting rules covering outside sales personnel, and who are not covered by another classification (N.O.C.) assigned to the employer's account. Duties of outside sales personnel contemplated by this classification are limited to soliciting new customers by telephone or in person, showing, selling, and explaining products or services, servicing existing accounts, completing correspondence, placing orders, performing public relations duties, and estimating. Duties of messengers are limited to delivering interoffice mail, making deposits, and

similar duties that are exclusively for the administration of the employer's business.

This classification excludes the delivery of products or merchandise or the stocking of shelves which is to be reported separately as applicable; the demonstration or delivery of machinery or equipment which are to be reported separately as applicable, establishments engaged as collection agencies or public relations agencies which are to be reported separately in classification 5301; establishments engaged in providing inspection and valuations exclusively for insurance companies which are to be reported separately in classification 4903.

Special note: When considering this classification care must be taken to look beyond titles of employees. Employees with occupational titles such as, but not limited to, collectors, counselors, consultants, or appraisers may or may not qualify for this classification. This is a restrictive classification; the qualifying factor is that all the conditions of the general reporting rules covering standard exception employees have been met.

6303-03 Insurance sales personnel and claims adjusters

Applies to insurance sales personnel and claims adjusters with outside duties. Duties of employees subject to this classification are limited to selling insurance policies at their place of business or at the client's home, or going to the scene of an accident or catastrophe to assess damage. Work may be performed within an office or away from the employer's premises.

Special note: Individuals performing duties as an agent, broker, or solicitor (and hold a license as issued by the office of the insurance commissioner) are exempt from coverage as specified in RCW 51.12.020(11) and 48.17.010, 48.17.020, and 48.17.030. To elect voluntary coverage these individuals must submit a completed optional coverage form to the department.

6303-21 Home health care services: Social workers and dietitians

Applies to social workers and dietitians employed by home health care service establishments who provide care for handicapped individuals. Duties of these employees include teaching and assisting physically or developmentally disabled individuals in their own home to manage daily living skills such as caring for themselves, dressing, cooking, shopping, and going to the doctor. This classification also includes dietitians, sometimes called nutritionists, who usually are referred to patients by their physicians. The dietitian assesses the patient's current nutritional status, including current food intake, medical background, family history, currently prescribed medications, and social and psychological needs, then develops a food plan to meet the patient's needs. Employees subject to this classification do no cooking.

This classification excludes nursing and home health care services which are to be reported separately in classification 6110; therapy services which are to be reported separately in classification 6109; domestic servants who are to be reported separately in classification 6510; and chore workers who are to be reported separately in classification 6511.

Special note: This is a restrictive classification; the qualifying factor is that all the conditions of the general

reporting rules covering standard exception employees have been met. *This classification is not to be assigned to any account that does not also have classification 6110.*

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-698, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-698, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-698, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-698, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-698, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-698, filed 11/30/79, effective 1/1/80; Order 76-36, § 296-17-698, filed 11/30/76; Order 73-22, § 296-17-698, filed 11/9/73, effective 1/1/74.]

WAC 296-17-699 Classification 6304.

6304-00 Stores: Department - retail

Applies to establishments engaged in operating large retail stores which are characterized by specialized departments such as, but not limited to, wearing apparel, jewelry, luggage, housewares, cosmetics and furniture. For purposes of this classification, a department store will include all of the following departments: Wearing apparel, shoes and household furnishings (such as, but not limited to, window coverings, bedding, linens, lamps). A department store will also have at least two of the following departments: Furniture, jewelry, audio equipment, luggage, hardware, giftware, china, or sporting goods. This classification includes employees of specialty services such as alteration personnel, and delivery drivers. This classification is distinguishable from clothing stores in classification 6305, or retail variety stores in classification 6406, in the number of specialized departments and the variety of nonclothing or giftware merchandise for sale. This classification also includes the placement or installation of furniture items such as, but not limited to, couches, china cabinets, end tables, dining tables, bedding such as mattresses and box springs, curtains, draperies, and mirrors in customer's locations.

This classification excludes automotive service centers which are to be reported separately in the applicable service classification and the installation of carpet, floor vinyl, tile, cabinets, exterior siding, painting, fencing, roofing or similar construction related activities which are to be reported separately in the classification applicable to the construction work being performed.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6304-01 Antique variety stores - retail

Applies to establishments engaged in the retail sale of a variety of used or antique merchandise. While the majority of merchandise is used, some of the items may be new. Merchandise includes, but is not limited to, glassware, jewelry, clothing, pictures, tools, floor coverings, and silverware and could include a limited amount of furniture.

This classification excludes antique or specialty stores engaged primarily in the sale of furniture which are to be reported separately in classification 6306; antique specialty stores engaged primarily in the sale of glassware, china or silverware which are to be reported separately in classification 6406; and antique specialty stores engaged primarily in the

sale of wearing apparel and/or shoes which are to be reported separately in classification 6305.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-699, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-699, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-699, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-699, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-699, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-699, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-699, filed 11/9/73, effective 1/1/74.]

WAC 296-17-700 Classification 6305.

6305-00 Stores: Clothing - retail

Applies to establishments engaged in the retail sale of new or used clothing. Merchandise varies, but generally includes shoes, jewelry, giftware, or accessories in addition to wearing apparel. Some establishments will specialize in certain types of clothing such as, but not limited to, athletic wear, T-shirts, coats, socks, or vintage clothing. This classification also applies to stores that rent clothing such as, but not limited to, costumes, tuxedos, or wedding apparel. This classification includes all store employees including specialty services such as alterations personnel and delivery drivers.

This classification is distinguishable from department stores in classification 6304 or retail variety stores in classification 6406 in the limited number of specialized departments and the variety of nonclothing or giftware merchandise for sale.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6305-01 Stores: Dry goods - retail

Applies to establishments engaged in the retail sale of a variety of new or used dry goods. For purposes of this classification dry goods include, but are not limited to, fabric, embroideries, veiling, laces, textile trimmings, curtains, draperies, blankets, bedspreads, sheets, pillowcases, tablecloths, napkins, and towels. This classification includes all store employees.

This classification is distinguishable from retail fabric stores in classification 6406 in that dry good stores will carry primarily finished piece goods for sale while fabric stores will carry primarily fabric, sewing notions and a limited supply of finished goods.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6305-02 Stores: Shoe - retail

Shoe shine stands

Applies to establishments engaged in the retail sale of new or used shoes. Establishments may sell a full line of shoes or they may specialize in certain types such as athletic shoes, safety shoes, work boots, women's, men's, or chil-

dren's shoes. It is customary for shoe stores to sell some related products such as, but not limited to, handbags, socks, belts, or shoe care products. This classification includes all store employees. This classification also applies to shoe shine stands.

This classification excludes establishments engaged in the manufacture or repair of shoes or boots which are to be reported separately in classification 3802.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6305-04 Stores: Western wear, including tack - retail

Applies to establishments engaged in the retail sale of new or used western style clothing. Merchandise varies, but may also include western style shoes and boots, jewelry, giftware, or horse tack. This classification includes all store employees including specialty services such as alterations personnel and delivery drivers.

This classification is distinguishable from department stores in classification 6304 in that classification 6305 businesses are not comprised of specialized departments and do not carry furniture, housewares, and similar items required as part of the department store classification.

This classification excludes establishments engaged exclusively in the sale of horse tack and related animal grooming and care products which are to be reported separately in classification 2009 "farm supply stores."

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6305-05 Stores: Wig or hat - retail

Applies to establishments engaged in the retail sale of new or used wigs or hats. Merchandise varies, but generally these establishments will also sell related hair care products, hat pins, broaches or similar accessory items. This classification includes all store employees.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6305-06 Custom dressmaking, tailoring, alterations

Applies to establishments who provide custom dressmaking, tailoring, or alterations services to others. Activities include the showing of sketches and fabrics, modeling samples, taking individual orders and measurements, cutting, basting and fitting. Employees use sewing machines, but much of the work is hand sewing, steaming or pressing. Materials include fabrics, buttons, zippers, and sewing notions. Tools and machinery include, but are not limited to, scissors, steam presses and irons, dress forms, and sewing machines with attachments to perform a variety of sewing functions. Custom dressmakers and tailors may sell fabrics and sewing notions, or limited supply ready-made apparel. The sale of these items by establishments engaged in custom dressmaking or tailoring is included in this classification. This classification is distinguishable from clothing manufac-

urers in classification 3802 in that establishments subject to classification 6305 make custom clothing for individuals rather than making garments on a quantity basis. However, customers of a 6305 business may order several items of a kind such as for a wedding party or small theater group.

This classification excludes the mass production of wearing apparel which is to be reported separately in classification 3802.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-700, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-700, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-700, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-700, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-700, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-700, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-700, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-700, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-700, filed 11/9/73, effective 1/1/74.]

WAC 296-17-703 Classification 6308.

6308-00 Stores: Jewelry - wholesale or retail

Applies to establishments engaged in the sale of premanufactured jewelry. Jewelry sales may be retail to consumers or on a wholesale basis to other stores and dealers. It is common for jewelry stores to employ a goldsmith who will size rings on premises, mount gem stones into settings, or make custom jewelry. Jewelry stores could also be engaged in watch repair and engraving and may offer these services as a part of the jewelry store business. Repair of watches and engraving is included in this classification when performed by jewelry store employees. Custom jewelry making subject to classification 6308-00 is distinguishable from jewelry manufacturing subject to classification 3602 in that businesses in classification 3602 are engaged primarily in the manufacture of jewelry in mass quantities, while jewelry stores in classification 6308 are primarily in the business of selling jewelry purchased from a manufacturer or dealer, and may also make custom or one-of-a-kind pieces.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6308-01 Stores: Hearing-aid - wholesale or retail

Applies to establishments engaged in the sale of hearing aids. Hearing aids are purchased directly from the manufacturer or a distributor and resold to retail consumers, or at wholesale to other hearing-aid stores. Stores subject to this classification routinely offer free hearing tests to customers. Classification 6308-01 is distinguishable from medical services rendered by a physician subject to classification 6109 in that technicians employed by hearing-aid stores subject to classification 6308 rely on sound testing equipment to conduct examinations. They can provide hearing-aid appliances to customers, but do not perform medical procedures and do not need medical certification. This classification includes technicians employed by the store who conduct hearing tests.

Medical doctors, on the other hand, perform a number of medical tests including X-ray and may recommend or perform hearing corrections through surgical procedures.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6308-02 Stores: Optical - wholesale or retail

Applies to establishments engaged in the sale of optical goods such as, but not limited to, eye glasses and contact lenses. Optical stores purchase eye glass frames and premade lenses from other sources and sell them to retail customers, or wholesale to other optical stores. Stores subject to this classification routinely offer free eye exams to customers. The eye examinations are performed by optometrists or by technicians. These technicians do not need medical certification in order to conduct tests. This classification includes optometrists or technicians employed by optical stores. Classification 6308-02 is distinguishable from medical services rendered by a physician (ophthalmologist) subject to classification 6109 in that optical stores in classification 6308 rely on testing equipment and can only provide eye glass appliances to customers. Medical doctors, on the other hand, perform a number of medical tests including X-ray and may recommend or perform vision corrections through surgical procedures.

This classification excludes establishments engaged in grinding operations as part of the manufacture of optical lenses which are to be reported separately in classification 6604 and establishments engaged in the manufacture of eye glass frames which are to be reported separately in the classification applicable to the materials and processes used.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6308-03 Stores: Clock and watch - wholesale or retail

Applies to establishments engaged in the sale of clocks and watches, including related repair. Stores subject to this classification carry an assortment of clocks and watches such as, but not limited to, cuckoo clocks, grandfather clocks, anniversary clocks, and an assortment of heirloom quality pocket or wrist watches. Establishments assigned to this classification are not engaged in the manufacture or assembly of clocks or clock kits. Clocks are purchased directly from the manufacturer or a distributor and resold to retail consumers, or at wholesale to other stores. Classification 6308-03 is distinguishable from clock or watch manufacturing subject to classification 3602 in that clock stores subject to classification 6308 are engaged exclusively in the sale of items manufactured by others and businesses in classification 3602 are engaged primarily in the manufacture of clock mechanisms.

This classification excludes establishments engaged in the manufacture of wooden components or cabinets such as those for grandfather or cuckoo clocks which are to be reported separately in classification 2905.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of

the general reporting rules covering standard exception employees have been met.

6308-04 Stores: Trophy or awards - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of trophies, plaques, awards and related items such as, but not limited to, banners, name badges, certificates, buttons, pins, ribbons, pens, advertising or specialty items. As a convenience to their customers, trophy stores may also sell small signs or similar items which they purchase from others. Establishments subject to this classification purchase component parts from other unrelated businesses, then assemble and engrave or letter them per customer specifications. Component pieces include, but are not limited to, plastic, marble, metal, or wood bases and backings, decorative mounts, small hardware, vinyl fabric, and ready made banners. They use hand tools, table top punching or bending devices and engraving equipment. While stores may still use old style engraving machines for some custom orders, most of today's engraving or lettering is done on computerized equipment.

This classification excludes the manufacture of component pieces or signs which is to be reported separately in the classification applicable to the work being performed.

Special note: Producing "computerized vinyl lettering or designs" is a normal activity in several types of businesses such as, but not limited to, trophy stores, manufacturers of textile banners, or sign painting services in a shop. Computerized lettering or designs are made on a plotter/cutter that is attached to a computer. A roll of vinyl fabric is placed on the plotter/cutter. Designs are created on the computer, then transferred electronically to the plotter/cutter that punches them out in the vinyl material. Designs are transferred onto the backing with the use of transfer paper. One must look beyond the producing of computerized vinyl applications when determining the nature of the business being classified. An employee whose *only* duties are generating vinyl lettering or designs on computerized equipment in an office environment could qualify for classification 4904 provided all the conditions of the general reporting rule covering standard exception employees have been met.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-703, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-703, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-703, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-703, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-703, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-703, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-703, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-703, filed 11/9/73, effective 1/1/74.]

WAC 296-17-704 Classification 6309.

6309-02 Stores: Gun - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of hand guns and rifles. Gun stores subject to this classification will routinely sell related goods such as, but not limited to, knives, archery supplies, ammunition, cleaning kits, targets, target launchers, ammunition belts and specialty clothing. It is common for gun stores to repair guns for their

customers. This generally consists of replacing worn or malfunctioning parts that they have in inventory, or that are special ordered from the manufacturer. Gun stores are not generally involved in machining operations although some light machine work is contemplated by this classification. Gun stores in this classification can also make custom ordered guns. This term may be misleading in that a custom gun made by a gun store is simply the assembly of various components to produce the desired gun. Depending on the size and location of the store a related shooting range may be found on the premise. Whether the shooting range is operated in connection with the store operation or by an independent business unrelated to the gun store, it is to be reported separately in classification 6208. Establishments in classification 6309-02 are distinguishable from operations covered in classification 3402, in that gun stores subject to classification 6309 are not engaged in the manufacture of guns, which includes such operations as machining barrels, fabricating triggers, springs, bolts, levers, clips and handles, or in the mass assembly of gun components into finished goods.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-03 Stores: Bicycle - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of all types of bicycles. Bicycle stores subject to this classification will sell related goods such as, but not limited to, helmets, pumps, carrier racks, water bottles, shoes, trailers, child carriers, and specialty clothing. It is common for bicycle stores to assemble new bicycles as well as tune and repair bicycles for their customers. This generally consists of replacing worn or malfunctioning parts that they have in inventory or that are special ordered from the manufacturer. Bicycle stores subject to this classification will occasionally make a custom bicycle. This term may be misleading in that a custom bicycle may be nothing more than the assembly of various components to produce the desired bicycle, or it could be the actual cutting, bending, and welding of tube metal, or the cutting, rolling and heating of graphite reinforced plastic material. Only those custom bicycles that are assembled from components *manufactured by others* are to be reported in classification 6309 and *only* if such custom work is incidental to the primary sales of off-the-rack bicycles manufactured by others.

This classification excludes machining operations, frame welding, and establishments engaged in custom manufacturing or mass producing bicycles from nonfinished goods which are to be reported separately in the classification applicable to the bicycle frame material and process used to manufacture the finished units.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-06 Stores: Garden supply - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of homeowner type yard and garden tools, equipment, and supplies. Establishments subject to this classifica-

tion will carry in their inventory and have available for immediate sale various garden tools and gloves, equipment, and supplies such as, but not limited to, rakes, shovels, post hole diggers (nonpower), hoes, wheel barrows, garden carts, edgers, weed wackers, lawn sprinklers, garden hose, lawn mowers, and chain saws. On a seasonal basis these establishments will routinely stock bags of various types of lawn, shrub and plant fertilizer, lawn seed, bags of potting soil, bags of beauty bark, flower bulbs, vegetable and flower seeds, and some bedding plants and small shrubs. This classification is distinguishable from nurseries in that nurseries sell plants, shrubs and trees that they have purchased from others or raised from seeds or cuttings, most of which are available for sale all year round. Nurseries typically sell soils and bark in bulk, but seldom sell lawn mowers, lawn tractors, edgers and similar items. Nurseries are further distinguishable from garden supply stores in that garden supply stores have a limited outside yard and are primarily composed of a store operation. Nurseries, on the other hand, have limited store operations and extensive yards where plants, shrubs, and trees are displayed and cared for, as well as extensive greenhouse operations. This classification also includes merchants who are engaged in the sale and/or hand packaging of agricultural seeds that have been processed by others.

This classification excludes the repair of tools and equipment sold which is to be reported separately in the classification applicable to the work being performed.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-07 Locksmiths

Applies to establishments engaged in servicing or repairing locksets. Establishments subject to this classification will have a small retail store where they sell new door locksets, repair customer locksets, re-key locksets, make duplicate keys, and sell home security items such as safes and alarm systems. In addition to store operations, this classification includes locksmith field work such as unlocking a car, removing a broken key from an ignition or door, and installing a replacement lockset in a door.

This classification excludes the installation of safes, new locksets, or dead bolt locks which is to be reported separately in classification 0607 and the installation of home security systems which is to be reported separately in classification 0608.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-08 Stores: Automobile, truck, motorcycle, or aircraft accessories or replacement parts - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of automobile, truck, motorcycle, or aircraft accessories or replacement parts. Most establishments subject to this classification carry a full line of parts ranging from batteries, wiper blades, ignition components, to engines, tires, and transmissions. However, this classification also applies

to establishments that sell specialized product lines such as, but not limited to, batteries, electrical systems, or transmission parts. This classification covers only the store operation. Any vehicle, tire, or machine shop service is to be reported separately in the applicable repair or service classification. Care should be exercised when considering the assignment of this classification to an establishment engaged in vehicle service or repair as parts departments may be included in the service or repair classification. *Only* those vehicle service or repair establishments that have "full line" replacement parts stores are to be assigned to this classification and *only* when the classification that governs the repair or service permits, the parts department to be reported separately.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-09 Stores: Architectural and surveyor supplies - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of professional and technical measurement equipment used primarily by architects and surveyors. Products sold by establishments subject to this classification include, but are not limited to, plan holders, plotters, lettering systems, engineering software, CAD supplies, copiers and computer paper and films. This classification includes the *in-shop* servicing or repair of products sold, such as replacing or adjusting parts.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-11 Stores: Stained art glass - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of stained art glass supplies. Operations contemplated by this classification include the receipt of merchandise purchased from unrelated businesses, dealers, or manufacturers, warehousing, stocking of shelves, cashiering, offering craft classes to customers, and delivery of merchandise to customers. Items sold by establishments subject to this classification include, but are not limited to, lead and leaded glass, crafts, light fixtures, terrarium parts, lamp shade parts, kits for picture frames, mirrors, books on stained glass, small grinders, glass cutters and other tools for making stained glass items.

This classification excludes the manufacture of stained glass and the fabrication and assembly of stained art goods which is to be reported separately in classification 3503 and stores that sell craft-making goods or hobby supplies which are to be reported separately in classification 6309-21.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-12 Stores: Wood stove and accessories - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of wood stoves, pellet stoves, fireplace inserts, and

accessories. The majority of stoves today are produced from cast iron or steel plate and may be finished with enamel or paint. Stove stores subject to this classification will sell related accessories such as, but not limited to, noncombustible hearths and irons, wood holders, pellet scoops, stovepipes, metal chimneys, decorative brass legs and brass handles and bags of pellets. Some wood stove dealers may sell both stoves and spas as their main product lines. Stores that sell both are to be reported separately in classification 6309-14. This classification includes the set-up of wood stoves and heaters which can be operated as part of a display area or showroom in the store when performed by employees of this business.

This classification excludes the installation and repair of wood stoves, furnaces, air conditioning units and vacuum cleaner systems which is to be reported separately in classification 0307; masonry work which is to be reported separately in classification 0302; and chimney cleaning which is to be reported separately in classification 4910.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-13 Stores: Hardware variety, N.O.C., specialty hardware or marine hardware - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of hardware related items. Operations contemplated by this classification include the receipt of merchandise purchased from unrelated business dealers or manufacturers, warehousing of inventory, stocking of shelves, cashiering, customer load out, assistance and delivery. Establishments subject to this classification cater to homeowners and, therefore, do not carry contractor quantities of products for sale. Hardware variety stores applicable to this classification are generally small retail stores (3,000 square feet or less). Hardware variety stores will have a wide assortment of products for sale ranging from paint and painting supplies, electrical and plumbing supplies, to hand or power tools, garden supplies, housewares, and hardware. For purposes of this classification the term "hardware" applies to nails, screws, bolts, hinges, staples, chain, and similar items. Classification 6309-13 is distinguishable from classification 2009 in that the quantity of products sold by hardware variety stores subject to classification 6309-13 is limited to homeowner quantities, the selection of product is limited, and they carry only a limited selection of lumber, if at all. Hardware variety stores may also carry seasonal plants. This classification also applies to specialty hardware or marine hardware stores.

This classification excludes hardware stores that sell lumber or building materials which are to be reported separately in classification 2009.

Special notes: Care should be exercised when assigning classification 6309-13 to a business. All other store and nursery classifications are to be considered before this classification is assigned. It is common for a nursery to have a substantial inventory of hardware and tools, just as it is common for farm supply stores to sell similar products, yet these types of businesses are covered in alternative classifications.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-14 Stores: Hot tub or spa - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of hot tubs and spas. Most dealers subject to this classification have small store operations where a limited supply of spas and hot tubs are displayed. Some may have distribution centers where spas are shipped from the manufacturer and stored until delivered to a showroom or directly to a customer. The majority of spa units are portable and self-contained, which means the plumbing, pump, wiring, and controls are already in place and enclosed in the siding surrounding the tub. They are ready to use once the electricity is hooked up at the customer's site. The other type of spas are referred to as "shells," which are usually set in place in the ground, then the pump, plumbing, electrical wiring, and any surrounding rockery or structures built around it. Stores that sell spas and hot tubs also stock related items such as, but not limited to, spa or swimming pool chemicals and cleaners, brushes, replacement pumps and parts, filters, and spa accessories such as fragrances. Some may also sell other product lines such as swimming pool shells, wood or pellet stoves and related items such as, but not limited to, lawn furniture, barbecues, or water sports equipment. Operations contemplated by this classification include the receipt of tubs, spas, pools, pool liners, chemicals and other products from manufacturers or unrelated companies, stocking shelves, setting up displays, cashiering, delivery of products to customer locations, instruction on testing and maintaining pool waters, and incidental pump repair in the store; it does not contemplate the repair or service of pumps or pools at customer's location. Establishments that sell both wood stoves and spas are to be reported in this classification. This classification also applies to establishments that rent hot tubs and deliver them to, and pick them up from, the customer's location.

This classification excludes establishments that sell only accessories for tubs or pools which are to be reported separately in classification 6406; establishments engaged in the sale of wood or pellet stoves, but do not sell spas, which are to be reported separately in classification 6309-12; and establishments engaged in the manufacture or installation of hot tubs which are to be reported separately in the classification applicable to the work being performed.

Special notes: Spa and hot tub dealers may be licensed contractors who build swimming or wading pools, in addition to the spas and hot tubs sold. Except for the in-store pump repair, all other electrical or plumbing installation or repair work, pump repair, landscaping, building of structures, pouring of concrete, and servicing of the pool waters are excluded from this classification and are to be reported separately in the classification applicable to the work being performed.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-15 Stores: Floor covering - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of floor coverings. Establishments subject to this classification sell a variety of floor coverings and related items such as, but not limited to, sheet vinyl, floor tile, ceramic wall or countertop tile, wood parquet, floor or area rugs, carpeting, window coverings, bathroom and kitchen accessories, and supplies to install products. Other stores may specialize in only one or a few of these products. Floor covering stores generally consist of a store operation where samples of all product types are displayed. Merchandise is usually ordered from the factory or distributor per customer specifications; however some goods are kept in stock and are available for immediate sale. Operations contemplated by this classification include the receipt of merchandise purchased from unrelated businesses and manufacturers, stocking shelves, cashiering, estimating floor covering needs from plans, blue prints and customer measurements, ordering special floor coverings from distributors or manufacturers, and delivering the product to customers.

This classification excludes all installation work and the manufacture of any product sold by floor covering stores, which is to be reported separately in the applicable construction, installation, or manufacturing classification.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-16 Pawn shops

Applies to establishments engaged in loaning money to others in exchange for collateral of new or used merchandise such as, but not limited to, jewelry, video equipment, and computers. It is common for pawn shops to sell new and used merchandise they have taken as collateral for defaulted loans. Operations contemplated by this classification include receiving merchandise from others, stocking of shelves, and cashiering.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-17 Stores: Sporting goods - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of a variety of sporting goods. Operations contemplated by this classification include the receipt of merchandise purchased from other unrelated businesses, dealers, or manufacturers, warehousing, stocking of shelves, cashiering, and delivery. For purposes of this classification the term "sporting goods" includes, but is not limited to, baseball gloves, bats, balls, fishing poles, tackle, reels, tennis racquets, bicycle helmets, exercise equipment, and specialty clothing and shoes. A store may carry equipment and related items for a number of sports, or specialize in a particular sport such as skiing or fishing.

This classification excludes stores that specialize in selling bicycles and related items such as tire pumps, water bottles, locks, shoes and clothing, which are to be reported separately in classification 6309-03, and stores that specialize in selling guns and related items such as ammunition, hunting

supplies, archery equipment, targets, knives, and clothing which are to be reported separately in classification 6309-02.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-18 Stores: Paint and wallpaper - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of paint and wallpaper supplies. Operations contemplated by this classification include the receipt of merchandise purchased from other unrelated businesses, dealers, or manufacturers, mixing paints and stains, warehousing, stocking of shelves, cashiering, and delivery of merchandise to customers. Establishments subject to this classification routinely offer pressure washer and spray units, and ladders for rent or sale which is included in this classification when such sales and rentals are conducted in connection with a paint and wallpaper store. This classification excludes establishments engaged in the rental of spray paint and pressure washer units which are to be reported separately in classification 1106.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-19 Stores: Sewing machines or vacuum cleaners - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of new or reconditioned sewing machines or vacuum cleaners. Operations contemplated by this classification include the receipt of merchandise purchased from other unrelated businesses, dealers, or manufacturers, warehousing, stocking of shelves, cashiering, demonstrating or delivering merchandise to customers, providing instructions or sewing classes to customers, and in-store repair. Sewing machine repair is generally limited and consists mainly of adjusting thread and stitch tensioners, aligning components (needle and foot), replacing electrical motor, lights and belts. Types of sewing machines include sergers, button holers, embroidery machines, and commercial machines such as those used by a tailor or an upholstery shop, but does not include industrial machines such as those used in feed and carpet mills.

This classification excludes fabric stores that may also sell sewing machines which are to be reported separately in classification 6406; and establishments engaged in the repair of industrial sewing machines which are to be reported separately in classification 3402 for shop operations and classification 0603 for field repairs.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-20 Stores: Custom framed art or U-frame - wholesale or retail; Art galleries

Applies to establishments engaged in the wholesale or retail sale of custom framed art such as, but not limited to, posters and pictures. Operations contemplated by this classification

include the receipt of merchandise purchased from other unrelated businesses, dealers, or manufacturers, warehousing, stocking of shelves, cashiering, cutting matte board, glass and frame material, assembling frames, mounting art, posters or pictures into custom made or premade frames and delivery of merchandise to customers. Custom frame manufacturing covered by this classification is distinguishable from other frame manufacturing covered in classifications 3404, 2909, and 3512 in that custom frame making contemplated in classification 6309-20 consists of cutting frame material purchased from others with a specialized saw and fastening the pieces together with a small air nailer or finish screws. Frame manufacturing operations in other classifications consist of extruding metal or plastic through dies to produce the desired frame material, or planing and molding the dimensional lumber to the desired appearance, cutting material in mass quantities, fastening frames together (mass production oriented) and boxing for shipment. U-frame operations consist of selling the various components such as, but not limited to, premade frames or precut unassembled frame kits, matte board, glass and prints to customers for customer assembly. This classification also includes establishments that operate art galleries, as the framing activities are similar.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6309-21 Stores: Hobby and craft - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of hobby and craft supplies. Operations contemplated by this classification include the receipt of merchandise purchased from other unrelated businesses, dealers, or manufacturers, warehousing, stocking of shelves, cashiering, offering craft classes to customers, and delivery of merchandise to customers. Items sold by establishments subject to this classification include, but are not limited to, floral arrangement supplies, pottery supplies, art glass supplies, doll making supplies, jewelry components such as beads and wire, and artist supplies. It is common for establishments subject to this classification to also be involved in custom picture framing in connection with hobby or craft store operation.

This classification excludes the manufacture of hobby and craft goods which is to be reported separately in the classification applicable to the materials and processes and stores that specialize in the sale of stained art goods which are to be reported separately in classification 6309-11.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-704, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-704, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-704, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 94-12-063, § 296-17-704, filed 5/30/94, effective 6/30/94; 93-12-093, § 296-17-704, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035, 87-12-032 (Order 87-12), § 296-17-704, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-704, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-704, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-704, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), §

296-17-704, filed 11/29/82, effective 1/1/83; Order 76-36, § 296-17-704, filed 11/30/76; Order 75-38, § 296-17-704, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-704, filed 11/9/73, effective 1/1/74.]

WAC 296-17-706 Classification 6402.

6402-00 Stores: Grocery, N.O.C. - retail

Applies to establishments engaged in providing retail sale of a full line of grocery items. To qualify for this classification an establishment must provide for retail sale all of the following items: Canned goods, dairy products, a full line of fresh meats, frozen meats, vegetables and fruits, baked goods, carbonated and alcoholic beverages, juices, household cleaners, laundry and health care products. These stores will generally be of the supermarket size but there may be some smaller stores which are also to be included in this classification if all of the items listed above are in their inventory. Also included in this classification, when performed by employees of the store, are in-store departments or services that are provided for the customer's convenience such as in-store bakeries, delis, video rental, film developing, florists, and wine departments.

This classification excludes in-store pharmacies which are to be reported separately in classification 6406, espresso street carts or stands and lunch counter/restaurant operations which are to be reported separately in classification 3905; convenience store or mini-markets that do not sell all of the above mentioned items which are to be reported separately in classification 6403; grocery or convenience stores with self-service gasoline operations which are to be reported separately without division of hours in classification 3410; and specialty retail stores that sell only dairy products, fruits and vegetables, soft drinks or wine and/or liquor which are to be reported separately in classification 6403.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-706, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-706, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-706, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 94-12-063, § 296-17-706, filed 5/30/94, effective 6/30/94. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-706, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-706, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-706, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-706, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-706, filed 11/9/73, effective 1/1/74.]

WAC 296-17-707 Classification 6403.

6403-01 Stores: Coffee, tea, or spice - retail

Applies to establishments engaged in the retail sale of specialty coffees, teas, or spices. They may sell coffee/tea in packaged and/or ready to drink forms and may offer a small selection of pastries or cookies for the customers convenience.

This classification excludes espresso street carts or stands and lunch counter/restaurant operations which are to be reported separately in classification 3905.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of

the general reporting rules covering standard exception employees have been met.

6403-02 Stores: Dairy products - retail

Applies to establishments engaged in the retail sale of dairy products such as, but not limited to, milk, eggs, cheese, and ice cream. As a convenience to their customers, these establishments may offer a limited supply of related foods such as bread. This classification is distinguishable from other 6403 store operations in that the primary products available for sale are dairy products.

This classification excludes espresso street carts or stands and lunch counter/restaurant operations which are to be reported separately in classification 3905.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6403-04 Stores: Fruit or vegetable - retail

Applies to establishments primarily engaged in the retail sale of fresh fruits and/or vegetables. These stores are usually found in individual stands at public or municipal street markets, or at roadside stands not located on the farm which may range from a small booth to a store-like operation. Sales at roadside stands away from the farm location or public markets are to be reported in this classification even if vendors grow all their own produce.

This classification excludes establishments that grow their own fruits and vegetables and sell them at their farm location which are to be reported separately in the appropriate agricultural classification as required by the general inclusion provision of the general rules, espresso street carts or stands and lunch counter/restaurant operations which are reported separately in classification 3905.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6403-05 Stores: Specialty grocery - retail

Applies to establishments engaged in retail sale of specialty grocery items. Establishments subject to this classification have a limited selection of grocery items which are generally related to ethnic foods and cuisine, gourmet meats, cheeses, or condiments, health food or pet food. This classification also applies to stores that sell U-bake pizza.

This classification excludes establishments engaged in the sale of nutritional supplements such as, but not limited to, vitamins, herbal compounds, protein powders, or energy bars, which are to be reported separately in classification 6406; espresso street carts or stands and lunch counter/restaurant operations which are reported separately in classification 3905.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6403-06 Stores: Mini-markets or convenience grocery, N.O.C. - retail

Applies to establishments engaged as retail convenience grocery stores or mini-marts. Generally these stores sell convenience items such as, but not limited to, soft drinks, beer/wine, snack foods, candy and a limited selection of canned or boxed foods. They may also prepare foods such as sandwiches, chicken, jo jos and hot dogs. While these stores may sell a variety of grocery items they are distinguished from stores in classification 6402 in that they do not sell all of the items specified for retail grocery store operations. Generally the difference can be established by determining if the store cuts and sells fresh meat. This classification also applies to food bank operations.

This classification excludes establishments engaged as convenience grocery stores or mini-markets with self-service gasoline operations which are to be reported separately in classification 3410 and espresso street carts or stands and lunch counter/restaurant operations which are to be reported separately in classification 3905.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6403-07 Stores: Wine, liquor, or soft drinks - retail

Applies to establishments engaged primarily in the retail sale of wine, liquor, or soft drinks and an assortment of pre-packaged mixed drinks, and related gift items. Establishments in this classification are not operated in connection with a manufacturing, bottling, restaurant, or tavern operation. This classification also applies to liquor stores operated by Native American tribes and to contract state liquor stores operated by nonstate employees. This classification contemplates a minimal amount of mail order sales and locker rentals in a wine cellar operated by a wine store.

This classification excludes state operated liquor stores which are reported separately in classification 5307; establishments engaged in the distillation, brewing, or bottling of alcohol, beer or wine, which often have tasting rooms and gift shops, which are reported separately in classification 3702; and establishments engaged primarily in selling wine-making or beer-making kits and supplies which are reported separately in classification 6406.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-707, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-707, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-707, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-707, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-707, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-707, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-707, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-707, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-707, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-707, filed 11/9/73, effective 1/1/74.]

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WAC 296-17-708 Classification 6404.**6404-00 Stores: Florists - wholesale or retail**

Applies to establishments engaged in the wholesale or retail sale of fresh-cut flower arrangements, potted plants, balloon arrangements, or arrangements of artificial or dried flowers and foliage. These shops typically carry related gift items, such as, but not limited to, terrariums, vases, and gift cards. Operations contemplated by this classification include the receipt of flowers, plants, and other merchandise from unrelated businesses, making the arrangements, storing fresh-cut flowers in refrigerated cases, caring for potted plants in a greenhouse, and delivering items sold. Also included in this classification is the assembly and/or decoration of Christmas wreaths. Wreaths may be assembled from fresh greens and decorations added, or decorations may be attached to grapevine wreath bases or metal rings. Establishments in this classification work with hand cutting tools, glue guns, small wires and wooden stakes, floral foam or clay, greenery, wreath bases, and decorative trimmings. This classification also applies to "cottage industries" that make similar items, and to establishments primarily engaged in packing holly that was grown by others.

This classification excludes establishments engaged in the planting, cultivating, and/or harvesting of flowers, plants, shrubbery, trees, florist greens, holly, baby's breath or florist greens which are to be reported separately in the classification applicable to the work being performed.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6404-02 Stores: Potted plants or aquariums - wholesale or retail: Sale, lease, or care of

Applies to establishments engaged in the wholesale or retail sale, lease, or care of potted plants or aquariums. Establishments subject to this classification will deliver, set up, service, and maintain plants or aquariums at the customer's location. The plants or aquariums are usually located inside, but may also be placed on extended living areas such as, but not limited to, porches, patios, or decks. Maintenance/care includes, but is not limited to, watering, trimming, pruning, fertilizing, and cleaning. Such establishments will frequently have a small greenhouse facility for caring and storing plants.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6404-03 Stores: Candy or cookie arrangement - wholesale or retail

Applies to establishments engaged in the wholesale or retail sale of candy or cookie arrangements in containers such as, but not limited to, mugs, vases, booklets, and novelty items. Typical occupations include, but are not limited to, making arrangements, answering telephones, selling to walk-in customers, cashiering, and delivering the bouquets. This classification does not include any on-premise manufacturing of candies or cookies.

This classification excludes establishments engaged in retail candy sales with on-premise manufacturing which are to be reported separately in classification 3905, and establishments engaged in specialty bake shops which are to be reported separately in classification 3901.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-708, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-708, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-708, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-708, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-708, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 86-12-041 (Order 86-18), § 296-17-708, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-708, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-708, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-708, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-708, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-708, filed 11/9/73, effective 1/1/74.]

WAC 296-17-709 Classification 6405.

6405-01 Tire sales and service centers, including automobile or truck care service centers or repair garages operated in connection with a tire service or repair center

Applies to establishments engaged in the sale, installation, and repair of vehicle tires for others. This classification includes, but is not limited to, tire store employees, service managers, and auto care service employees. Services provided include, but are not limited to, tire mounting and balancing, in-shop or mobile service flat repair, alignments, brake service, muffler repair, tune-ups, and oil changes. It is common for tire centers to offer other automotive services such as wiper replacement, radiator flush, battery replacement and even major engine and transmission work which are also included in this classification. This classification is distinguishable from classification 3411 in that classification 6405 applies to any business that installs and services tires regardless of the number of tires sold. Establishments assigned to classification 3411 do not install or service tires. *Classification 3411 is not to be assigned to an establishment assigned classification 6405.*

This classification excludes towing services for hire which are to be reported separately in classification 1109 and tire sales and services centers which are also engaged in tire retreading operations which are to be reported separately in classification 6405-06.

6405-06 Tire rebuilding, retreading and/or recapping

Applies to establishments engaged in rubber tire rebuilding, retreading and/or recapping either at their tire dealership location, or at a location physically separate from the tire store. Rebuilding tires differs from the manufacture of tires in that rebuilding, recapping, or retreading simply restores used tires to a usable condition by bonding new rubber onto the existing work tread and lateral surface. First, tires are inspected for separations and penetrations. To remove the tread pattern, the casing is mounted on a wheel, inflated, and smoothed with a buffer or abrasive file. Any rocks, nail heads, etc., are pulled out with air tools, and the holes

repaired with a rubber patch or a strip of rubber applied with an extruder gun. In the hot process, the buffed tire is put on a spinning wheel and unvulcanized tread rubber is wrapped around the tread area of the tire body either manually or mechanically. The tire is then placed inside a curing mold which has a tread design, and heated at 320 degrees for several hours so the rubber expands into the design and forms the tread. After the tire is removed from the vulcanizing mold, it is inflated to high pressure and cooled. In the cold process, commonly referred to as bandage, the new tread is a precured strip or rubber compound with the tread design already molded into it. Only enough old rubber is removed to true the tire and provide a bonding surface. Air hoses or solvents are used to remove contaminants which would interfere with the adhesion process. The tire is inflated to its normal running pressure and a rubber cement is applied over the buffed surface by spray gun or brush. When the cement dries the precured tread is wrapped around the casing. The strip is bonded to the tire casing under pressure and heated at 210 degrees in a curing chamber. This classification excludes tire dealers that do not perform rebuilding, recapping or retreading which are to be reported separately in classification 6405-01 and the manufacture of tires which is to be reported separately in classification 3513.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-709, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-709, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-709, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 91-12-014, § 296-17-709, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-709, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-709, filed 2/28/85, effective 4/1/85; Order 75-38, § 296-17-709, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-709, filed 11/9/73, effective 1/1/74.]

WAC 296-17-710 Classification 6406.

This classification applies to specialty retail store operations engaged primarily in the sale of a wide variety of products ranging from collectibles such as stamps, coins, sports cards, and dolls to table top appliances such as portable televisions, blenders, mixers and toasters. This classification is comprised of subclassifications that cover a specific type of retail store operation. One of the subclassifications applies to the sale of products which are not covered by another classification. Although the products sold by establishments subject to this classification will vary by each subclassification, the overall operational activities are similar. Each business covered by this classification will generally employ cashiers and merchandise stockers, as well as other occupations of workers.

Special note: This classification excludes all repair operations unless it is specifically included in the classification, delivery service, outside installation work, and lunch counters and restaurants which are to be reported separately in the classification applicable to the work or service being performed.

Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6406-00 Retail stores, N.O.C.

Applies to establishments engaged in the retail sale of merchandise or services not covered by another classification (N.O.C.). Merchandise includes, but is not limited to, greeting cards, costume jewelry, scarves, tropical fish and birds and related fish or bird supplies, table top appliances such as mixers, blenders, microwave ovens, or table top satellite receiving units, quick print copy or FAX services and related specialty items or services. This classification also applies to establishments that provide inventory services for other businesses.

This classification excludes pet stores that sell dogs or cats and establishments engaged in pet grooming services which are to be reported separately in classification 7308; pet food stores which are to be reported separately in classification 6403; and offset, cold press and similar printing operations which are to be reported separately in classification 4101.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-01 Stores: Camera or photography supply - retail

Applies to establishments engaged in the retail sale of cameras and photography and dark room supplies such as, but not limited to, batteries, film, processing trays, chemicals, print paper, enlargers, and timers. It is common for these establishments to offer film developing services which may be either a one-hour service or an overnight process. Both types of film developing services are included in this classification when conducted in connection with a camera and photography supply store. This classification is distinguishable from classification 6506 in that establishments covered in classification 6506 are not engaged in the sale of cameras or photo developing equipment.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-03 News and magazine stands - retail

Applies to establishments engaged in the retail sale of newspapers and magazines. Establishments subject to this classification may sell newspapers or magazines from various locations such as, but not limited to, stands at public markets, store operations in malls, or from a street corner.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-09 Arcades: Coin or token operated

Applies to establishments engaged in operating coin- or token-operated arcades. This classification covers attendants, change makers, and security personnel who monitor the game rooms and make change. Attendants may remove tokens and money from machines and may perform minor adjustments such as resetting a jarred machine.

This classification excludes the installation, removal or repair of machines which is to be reported separately in classification 0606.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-11 Stores: Office stationery and machinery - retail

Applies to establishments engaged in the retail sale of office stationery, supplies, and/or machinery. For purposes of this classification "office stationery and supplies" includes, but is not limited to, paper, writing tablets, computer software, pens, pencils, markers, staples, staplers, scissors, paper clips, and binders. "Office machinery or business machinery" includes, but is not limited to, calculators, typewriters, various types of copy machines, fax machines, and desk top and lap top computers.

This classification excludes service and repair of office/business machines which is to be reported separately in classification 4107 and establishments engaged in sale of office furniture which are to be reported separately in classification 6306.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-12 Stores: Fabric, yardage, yarn and needlework supplies - retail

Applies to establishments engaged in the retail sale of fabric, yardage, yarn and needlework supplies. It is common for establishments subject to this classification to have a small inventory of noncommercial/industrial sewing machines and sergers for sale in addition to fabric, sewing notions, patterns, and related supplies. Fabric and yarn stores may also offer sewing and craft classes which are included in this classification when taught by employees of an employer subject to this classification. This classification is distinguishable from sewing machine stores in classification 6309 in that the principle products sold in classification 6406 are fabric and sewing notions while sewing machine stores are not engaged in the sale of fabric or yardage.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-14 Stores: Wind or string musical instruments - retail

Applies to establishments engaged in the retail sale of musical instruments such as, but not limited to, drums, wind instruments, guitars, and banjos. This classification includes music lessons when provided by employees of an employer subject to this classification and includes minor adjustment services such as replacing a drum skin or a broken string on a guitar.

This classification excludes the repair of wind and string musical instruments which is to be reported separately in the applicable repair classification; establishments engaged in the repair of pianos which are to be reported separately in classification 2906; and establishments engaged in the sale of pianos and organs which are to be reported separately in classification 6306.

Special notes: Classification 6406 does not apply to any establishments that sells pianos or organs in addition to wind or string instruments. Refer to classification 6406 general

description at the beginning of this rule for operations excluded from this classification.

6406-16 Stores: Drug - retail

Applies to establishments engaged in the retail sale of prescription and nonprescription drugs and/or nutritional supplements such as, but not limited to, vitamins, herbal compounds, and energy bars. Drug stores subject to this classification may also carry a variety of personal care and grooming products and may rent crutches, canes, wheel chairs, and walkers.

This classification excludes establishments engaged in the sale and/or rental of hospital beds, motorized wheel chairs, and other patient appliances which are to be reported separately in classification 6306, and establishments engaged in the sale/rental and service (repair) of motorized mobility aids such as wheelchairs and 3-wheel scooters which are to be reported separately in classification 3309.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-17 Stores: Variety - retail

Applies to establishments engaged in the retail sale of a variety of consumer goods such as, but not limited to, housewares, linens, clothing, toys, and candy. In earlier years establishments subject to this classification were often referred to as "5 and 10 cent stores." Although these stores carry much of the same merchandise as a department store, they are distinguishable in that variety stores are not comprised of specialized departments and do not generally carry the quantity/assortment of products that department stores do.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-18 Private mail box; safety deposit box; computer tape storage facilities - rent or lease

Applies to establishments engaged in renting or leasing private mail boxes, safety deposit boxes, or computer and financial record storage facilities. Establishments subject to this classification will operate a secured facility where they receive and sort their customers' mail, parcels and packages from the U.S. Post Office or other parcel/package delivery companies, and package articles for shipment for their customers. They also provide a secured storage facility equipped with safety deposit boxes which they rent out on a short or long term basis. It is common for these establishments to offer additional services such as FAX, and copying services.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-19 Stores: Coins, stamps, baseball cards, and comic books - retail

Applies to establishments engaged in the retail sale of coins, stamps, baseball cards, comic books, and similar collectibles. Establishments subject to this classification may be engaged exclusively in mail order sales, sell from browse

tables at collectible or trade shows, through specialty auctions, or may sell from a store location. Coin and stamp stores routinely sell magazines, periodicals, and supplies that cater to collections or hobbies. Card shops routinely sell other sports memorabilia such as autographed baseballs, footballs and basketballs, framed pictures, POGS and buttons.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-20 Stores: Book, record, cassette, compact disc, and video - retail

Applies to establishments engaged in the retail sale or rental of new or used books, records, cassettes, compact discs or videos. Establishments subject to this classification may be engaged exclusively in mail order sales, sell from browse tables or trade shows, through specialty auctions or may sell from a store location.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-23 Stores: Candy - retail

Applies to establishments engaged in the retail sale of packaged and unpackaged candy they have purchased from others.

This classification excludes establishments engaged in the on-premise manufacture of candy and the subsequent retail sale of these products which are to be reported separately in classification 3905; and establishments engaged in the manufacture of candy or confections for wholesale to retail establishments or distributors which are to be reported separately in classification 3906.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-24 Stores: Cigarette and tobacco - retail

Applies to establishments engaged in the retail sale of cigarettes, tobacco, and related products such as, but not limited to, pipes, pipe cleaning supplies, rolling machines, cigarette papers, lighters, lighter fluid, and cigarette cases.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-25 Stores: Telephones - retail

Applies to establishments engaged in the retail sale of telephones, pagers, and cell phones. Establishments subject to this classification are not a utility company in that they do not operate telephone exchanges and are not regulated by the Utilities and Transportation Commission of Washington. Their operations are limited to the sale of communication hardware. Stores subject to this classification may arrange activation and service for their customer, or the customer may contact the service provider directly.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-27 Stores: Stereo components - retail

Applies to establishments engaged in the retail sale of stereo components. Establishments subject to this classification will sell a variety of audio and video appliances such as, but not limited to, video players, stereos and portable televisions. These establishments may also sell and install automobile stereo speaker systems and car phone systems; however, the installation is not covered in classification 6406-27.

This classification excludes the installation, service or repair of home or car stereos and car phone systems which are to be reported separately in classification 0607, and establishments engaged in the sale of stereo and television console sets, big screen televisions, or other major appliances which are to be reported separately in classification 6306.

Special note: Classification 6306 applies to any establishment that sells TV console sets or big screen TVs, even if the majority of their inventory is stereo components and/or portable TVs. Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-29 Stores: Toys - retail

Applies to establishments engaged in the retail sale of a variety of toys, games, and related items for persons of all ages. Merchandise includes, but is not limited to, video games, tricycles or bicycles, books, dolls and stuffed animals, outdoor play equipment, and specialty clothing.

This classification excludes establishments engaged in the retail sale of sporting goods and bicycles which are to be reported separately in classification 6309. This classification is distinguishable from businesses in classification 6309 in that the principle products of stores subject to classification 6406 are toys and games, as compared to stores in classification 6309 which are primarily engaged in the sales of sporting goods and bicycles.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-30 Stores: Cosmetics - retail

Applies to establishments engaged in the retail sale of cosmetics and fragrances. Related services usually offered by these types of stores include consultations with clients regarding make-up techniques, styles, and colors.

This classification excludes hair and nail salons which are to be reported separately in classification 6501.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-31 Stores: Housewares - retail

Applies to establishments engaged in the retail sale of housewares such as, but not limited to, pots and pans, flatware, dishes, towels, canister sets, soap dishes, towel bars, waste baskets, plant stands, and curtains or draperies.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

6406-33 Stores: Gift shops, N.O.C. - retail

Applies to establishments engaged in the retail sale of gift items not covered by another classification (N.O.C.) such

as, but not limited to, crystal and silver serving pieces, china, cut glass, picture frames, wedding and shower books and invitations, special occasion cards, decorative statues, boxed candy, and ornaments. This merchandise tends to be of a finer selection than the everyday wares common in variety shops.

Special note: Refer to classification 6406 general description at the beginning of this rule for operations excluded from this classification.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-710, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-710, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-710, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-710, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 86-12-041 (Order 86-18), § 296-17-710, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-710, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-710, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-710, filed 11/30/83, effective 1/1/84; 80-17-016 (Order 80-23), § 296-17-710, filed 11/13/80, effective 1/1/81; Order 77-27, § 296-17-710, filed 11/30/77, effective 1/1/78; Order 75-38, § 296-17-710, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-710, filed 11/9/73, effective 1/1/74.]

WAC 296-17-711 Classification 6407.

6407-00 Wholesale stores, N.O.C. - including combined wholesale and retail store operations

Applies to establishments engaged in the wholesale, or combined wholesale and retail sales of merchandise that is not covered by another classification (N.O.C.). Establishments subject to classification 6407 usually own the merchandise they sell, but may also be marketing goods on consignment, in which case classification 6407 still applies because the exposure and processes are the same. This classification is primarily the wholesale counterpart (supplier) for establishments assigned to retail store classification 6304, 6305 and 6406. Work contemplated by classification 6407 includes, but is not limited to, maintaining warehouse inventories, sorting and grading goods, and breaking down bulk quantities to repack into smaller lots. Equipment typically used includes, but is not limited to, balers to bind merchandise into bundles, strapping equipment to secure palletized goods, forklifts, and hand tools.

This classification excludes delivery which is to be reported separately in classification 1101.

Special notes: When assigning classification 6407, care must be exercised to look beyond the words "wholesale" or "retail." The manufacturer of a product will also "wholesale" their merchandise (or a combination of their own merchandise and finished products bought from other manufacturers) to a customer. These sales are an integral part of the manufacturing/marketing process and is an inclusion in the manufacturing classification. Establishments that buy goods, such as clothing or cloth goods, in wholesale quantities, then screen print or embroider them for resale are performing manufacturing operations and are to be reported separately in the appropriate manufacturing classification.

Warehouse operations in classification 2102, with the exception of grocery dealers, do not own the product they are warehousing and are not in the business of selling the goods they store. Businesses in classification 6407 may operate a warehouse, but only as an integral part of the wholesal-

ing/distribution process, which is included in classification 6407.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-711, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-711, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-711, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-711, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-711, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-711, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-711, filed 11/9/73, effective 1/1/74.]

WAC 296-17-712 Classification 6408.

6408-03 Dealers: Farm machinery/implement

Applies to establishments engaged in the sale, lease, and/or rental, of new or used farm machinery and implements. This classification also applies to the service, repair and/or demonstration of those items by the dealer either on their premises or at the customer's site. For purposes of this classification the term farm machinery refers to engine-powered machinery such as, but not limited to, tractors, combines, and swathers, riding mowers, sprayers, pumps, and generators. Implements include, but are not limited to, plows, discs, balers, or rakes which are attached to and/or powered by farm machinery. The variety of merchandise varies with the needs of the geographical area and may be displayed in inside showrooms and/or outside yards. In addition to parts for the machinery or implements, establishments in this classification may carry some automobile parts, hardware items, and supplies such as oil, filters, and belts. This classification includes sales and lot personnel, service managers and employees, parts department employees, towing service for in-shop repairs, delivery of merchandise to the customer, and regional sales and/or service representatives who provide factory service or training to local dealers and other customers.

This classification excludes establishments that repair and/or service farm type tractors, *but who are not involved in the sale of them*, which are to be reported separately in classification 6409; store operations of dairy equipment and supply dealers which are to be reported separately in classification 6407; the installation, service, or repair of dairy machinery or equipment which is to be reported separately in classification 0603; all field installation, service, or repair work of wind machine dealers which is to be reported separately in classification 0603; and the manufacture or structural repair of heavy machinery or equipment which is to be reported separately in classification 5109.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-712, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-712, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-712, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-712, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-712, filed 11/30/83, effective 1/1/84; Order 74-40, § 296-17-712, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-712, filed 11/9/73, effective 1/1/74.]

WAC 296-17-713 Classification 6409.

6409-00 Dealers: Machinery/equipment, N.O.C.;

Service/repair garages: Machinery/equipment, N.O.C.

Applies to establishments engaged in the sale, lease, rental, service, and/or repair of new or used machinery and equipment not covered by another classification (N.O.C.).

For purposes of this classification the terms machinery or equipment includes, but are not limited to, semi trucks, diesel tractors, buses, construction equipment, concrete barriers and other flagging equipment used in construction projects, logging equipment, transportation equipment, freight hauling equipment, well drilling equipment, power generators, and industrial or manufacturing machinery. Operations of dealers include, but are not limited to, the sale, lease, rental, demonstration, service, or repair of their equipment, either on their premises or at the customer's site, and delivery to customer. The variety of merchandise carried by a machinery and equipment dealer varies with the needs of the geographical area and may be displayed in inside showrooms and/or outside yards. Operations of service centers include diagnostic services, all phases of mechanical service such as, but not limited to, tuning, overhauling and/or rebuilding engines, motors, or transmissions, resurfacing heads, repairing carburetors or fuel injection systems and grinding valves or brakes on equipment or machinery owned by others. In addition to parts for the machinery and equipment, establishments in this classification may carry some automobile parts, hardware items, and supplies such as oil, filters, and belts. This classification includes sales and lot personnel, service managers and employees, parts department employees, towing service for in-shop repairs, and regional sales and/or service representatives who provide factory service or training to local dealers and other customers. This classification also includes the rental and installation of temporary fences.

This classification excludes farm machinery and equipment dealers who are to be reported separately in classification 6408; installation of industrial plant equipment which is to be reported separately in classification 0603; store operations of dairy equipment and supply dealers which is to be reported separately in classification 6407; the installation, service, or repair of dairy machinery or equipment which is to be reported separately in classification 0603; all field installation, service, or repair work of wind machine dealers which is to be reported separately in classification 0603; and the manufacture or structural repair of heavy machinery or equipment which is to be reported separately in classification 5109.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-713, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-713, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-713, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-713, filed 11/30/83, effective 1/1/84; 80-17-016 (Order 80-23), § 296-17-713, filed 11/13/80, effective 1/1/81; Order 74-40, § 296-17-713, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-713, filed 11/9/73, effective 1/1/74.]

WAC 296-17-717 Classification 6504.

6504-00 Stores: Charitable or welfare

Applies to those employees of a charitable or welfare organization who are engaged in operating a store. Stores of this type usually deal in used merchandise such as, but not limited to, clothing, household appliances, toys, housewares, furniture, and garden tools that has been donated to the organization. Work contemplated by this classification includes, but is not limited to, the collection of donated items from locations away from the store, conditioning donated items, stocking and cleaning the store, and cashiering. Conditioning

is limited to cleaning, reupholstery work, and minor repairs; it does not include major mechanical repairs or refinishing furniture.

This classification excludes establishments engaged in repairing and selling used appliances which are to be reported separately in classification 0607; and all other employees of the charitable or welfare organization not employed in the store who are to be reported separately in the classification applicable to the work performed.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-717, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-717, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-717, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-717, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-717, filed 2/28/85, effective 4/1/85; 81-24-042 (Order 81-30), § 296-17-717, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-717, filed 11/9/73, effective 1/1/74.]

WAC 296-17-719 Classification 6506.

6506-00 Photography studios

Applies to establishments engaged in the operation of photography studios. Photographers use a wide range of still and motion cameras; services include both sitting portraits and motion pictures of special events, and are photographed in the studio or at outside locations. Photographers may develop and print photographs in their own studio darkrooms, or they may contract out to an independent photo finishing shop. Studios may also offer services such as retouching negatives, restoration work, mounting and framing pictures, and enlarging photographs. This classification includes glamour and boudoir photography studios which often have a salon where clients have their hair styled and make-up applied. This classification also includes booths, usually located in malls, that will produce photography novelty items such as, but not limited to, cups, shirts and calendars from photographs. Photographs may be taken on location or the customer may bring a picture or negative in to have the image applied to the particular item. Video taping services performed in connection with photography studios is included in this classification.

This classification excludes delivery drivers who are to be reported separately in classification 1101; and establishments engaged in video taping services not in connection with photography studio operations which are to be reported separately in classification 6303.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6506-01 Film processing shops

Applies to establishments engaged in processing film. Operations include, but are not limited to, processing film, reproducing negatives, prints or slides, enlarging pictures, mounting and finishing, storing and mixing chemicals, and inspecting and packaging finished products. Finishing processes may be manual or automated. These shops may offer retail type film developing services to commercial laborato-

ries that provide mass film developing and/or one-hour processing services.

This classification excludes delivery drivers who are to be reported separately in classification 1101.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6506-02 Motion picture film exchanges

Applies to establishments engaged in the operation of motion picture film exchanges. These exchanges receive fully processed movie films from producers, which they catalogue and store for subsequent rental or sale to commercial movie theaters, television networks, or other groups. Film exchanges have a projection room where customers may view the film before they book it. When rented films are returned, they are inspected and repaired as necessary. Repair usually consists of cutting out damaged section and splicing the film with special adhesive and pressure.

This classification excludes delivery drivers who are to be reported separately in classification 1101 and video rental stores which are to be reported separately in classification 6406.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

6506-03 Microfilming

Applies to establishments engaged in providing microfilming services for others. Microfilming reproduces and preserves documents onto film in greatly reduced sizes to allow the storage of information in less space. Documents are photographed; the film is developed in automatic processing units, then stored on reels or cartridges or cut into microfiche. Establishments subject to this classification usually offer related services such as, but not limited to, advice on setting up micrographic systems, the sale or rental of supplies or equipment, storage facilities, keypunch services, film restoration, and/or the destruction of source materials.

This classification excludes drivers who are to be reported separately in classification 1101.

Special note: Clerical office and outside sales employees may be reported separately provided all the conditions of the general reporting rules covering standard exception employees have been met.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-719, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-719, filed 8/28/98, effective 10/1/98; 96-12-039, § 296-17-719, filed 5/31/96, effective 7/1/96; 85-24-032 (Order 85-33), § 296-17-719, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-719, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-719, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-719, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-719, filed 11/9/73, effective 1/1/74.]

WAC 296-17-72202 Classification 6511.

6511-00 Chore services

Applies to establishments engaged in providing chore services to private individuals. Chore services performed by the chore workers/home care assistants include, but are not

limited to, general household chores, meal planning and preparation, shopping and errands either with or without the client, personal care such as bathing, body care, dressing, and help with ambulating, as well as companionship. Frequently the recipients of service are funded by DSHS or some other community service agency; however, the services are also available to those who pay privately.

This classification excludes individuals working under a welfare special works training program who are to be reported separately in classification 6505; domestic (residential) cleaning or janitorial services which are to be reported separately in classification 6602; and skilled or semiskilled nursing care which is to be reported separately in classification 6110.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-72202, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-72202, filed 8/28/98, effective 10/1/98.]

WAC 296-17-75306 Classification 7100.

7100-00 Exempt limited liability company members, N.O.C.

Applies to members of a limited liability company exempt from mandatory coverage under RCW 51.12.020(13) who have elected optional coverage, and perform *only* administrative, clerical and outside sale duties. Any LLC member electing optional coverage who performs duties directly related to the operational activities of the company must be reported in the basic classification applicable to the work being performed.

Special note: Under no circumstances is classification 4904 to be assigned to any exempt member of a limited liability company. Any member of a limited liability company who has elected optional coverage and is engaged exclusively in outside sales is to be reported separately in classification 6303.

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073, 99-24-055, § 296-17-75306, filed 11/29/99, effective 12/31/99.]

WAC 296-17-764 Classification 7202.

7202-00 Real estate agencies

Applies to establishments engaged in buying, selling, renting, and appraising real estate for others. A real estate licensee will study property listings, accompany clients to property sites to show the property, and assist in the completion of real estate documents such as real estate contracts, leases, and seller's disclosure documents. They will also hold open houses, conduct negotiations, and assist at the closing. This classification includes clerical office and sales personnel.

This classification excludes building and/or property management services which are to be reported separately in classification 4910.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-764, filed 8/31/99, effective 10/1/99; 98-18-042, § 296-17-764, filed 8/28/98, effective 10/1/98; 85-24-032 (Order 85-33), § 296-17-764, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-764, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-764, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.030 and 51.16.035, 79-12-086 (Order 79-18), § 296-17-764, filed 11/30/79, effective 1/1/80.]

WAC 296-17-855 Experience modification. The basis of the experience modification shall be a comparison of the actual losses charged to an employer during the experience period with the losses which would be expected for an average employer reporting the same exposures in each classification. The comparison shall contain actuarial refinements designed to mitigate the effects of losses which may be considered catastrophic or of doubtful statistical significance, due consideration being given to the volume of the employer's experience. Except for those employers who qualify for an adjusted experience modification as specified in WAC 296-17-860 or 296-17-865, the experience modification shall be calculated from the formula:

$$\text{MODIFICATION} = \frac{\text{Ap} + \text{W Ae} + (1 - \text{W}) \text{Ee} + \text{B}}{\text{E} + \text{B}}$$

The components Ap, WAe, and (1-W) Ee are values which shall be charged against an employer's experience record. The component, E, shall be the expected value of these charges for an average employer reporting the same exposures in each classification. The meaning and function of each symbol in the formula is specified below.

"Ap" signifies "primary actual losses." For each claim the primary actual loss is defined as that portion of the claim which is considered completely rateable for all employers and which is to enter the experience modification calculation at its full value. For each claim in excess of \$10,072 the primary actual loss shall be determined from the formula:

$$\text{PRIMARY LOSS} = \frac{26,260}{\text{Total loss} + 15,756} \times \text{total loss}$$

Primary actual losses for selected claim values are shown in Table I. For each claim less than \$10,504 the full value of the claim shall be considered a primary loss.

"Ae" signifies "excess actual losses." For each claim the excess actual loss is defined as that portion of the claim which is not considered completely rateable for all employers. The excess actual loss for each claim shall be determined by subtracting the primary loss from the total loss.

"W" signifies "W value." For each employer, the W value determines the portion of the actual excess losses which shall be included in the calculation of his experience modification, due consideration being given to the volume of his experience. This amount is represented by the symbol "WAe" in the experience modification formula. W values are set forth in Table II.

"E" signifies "expected losses." An employer's expected losses shall be determined by multiplying his reported exposure in each classification during the experience period by the classification expected loss rate. Expected loss rates are set forth in Table III.

"Ee" signifies "expected excess losses." Expected losses in each classification shall be multiplied by the classification "D-Ratio" to obtain "expected primary losses." Expected excess losses shall then be calculated by subtracting expected primary losses from expected total losses. Each employer shall have a statistical charge included in the calculation of his experience modification, said charge to be actuarially equivalent to the amount forgiven an average employer

because of the exclusion of a portion of his excess actual losses. This charge is represented by "(1-W) Ee" in the experience modification formula. D-Ratios are set forth in Table III.

"B" signifies "B value" or "ballast." In order to limit the effect of a single severe accident on the modification of a small employer, a stabilizing element (B value) shall be added to both actual and expected losses. B values are set forth in Table II.

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-855, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-855, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-855, filed 12/1/97, effective 1/1/98; 96-24-063, § 296-17-855, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.04.020. 95-23-080, § 296-17-855, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-855, filed 11/28/94, effective 1/1/95; 93-24-114, § 296-17-855, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-855, filed 5/31/93, effective 7/1/93; 92-24-063, § 296-17-855, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-855, filed 11/27/91, effective 1/1/92; 90-24-042, § 296-17-855, filed 11/30/90, effective 1/1/91; 89-24-051 (Order 89-22), § 296-17-855, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035 and 51.04.020. 88-24-012 (Order 88-30), § 296-17-855, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035. 87-24-060 (Order 87-26), § 296-17-855, filed 12/1/87, effective 1/1/88. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 86-24-042 (Order 86-41), § 296-17-855, filed 11/26/86. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-855, filed 11/27/85, effective 1/1/86; 84-24-016 (Order 84-23), § 296-17-855, filed 11/28/84, effective 1/1/85; 83-24-017 (Order 83-36), § 296-17-855, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-855, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-855, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-855, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-855, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-17-855, filed 11/30/77, effective 1/1/78; Order 74-40, § 296-17-855, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-855, filed 11/9/73, effective 1/1/74.]

WAC 296-17-87304 Change in ownership with an accompanying change in business activities. When a majority change in the ownership of a firm (business) is accompanied by a change in the business activity of the firm (business) and this change is sufficient to result in a reclassification of the basic classification assigned to the firm (business), then the past experience, prior to the change, shall be excluded from future experience ratings of the acquiring entity. If the change in business activities is not sufficient to result in a reclassification of the basic classification assigned to the firm (business), the acquiring entity shall retain the past experience attributable to the firm (business) or portion thereof which was purchased. For purposes of this rule, the term "basic classification" shall mean the classification other than standard exception classifications as defined in WAC 296-17-31018(2) which produces the largest number of worker hours during the calendar year in which the change in business operations is noted. The basic classification of a business shall be determined in accordance with WAC 296-17-31012.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-87304, filed 8/31/99, effective 10/1/99. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 90-20-092, § 296-17-87304, filed 10/1/90, effective 11/1/90.]

WAC 296-17-875 Table I.

Primary Losses for Selected Claim Values

CLAIM VALUE	PRIMARY LOSS
10,504	10,504
11,358	11,000
13,259	12,000
15,447	13,000
17,992	14,000
24,571	16,000
34,335	18,000
50,339	20,000
81,369	22,000
180,015*	24,147
262,600**	24,774

*Average death value

** Maximum claim value

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-875, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-875, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-875, filed 12/1/97, effective 1/1/98; 96-24-063, § 296-17-875, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.04.020. 95-23-080, § 296-17-875, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-875, filed 11/28/94, effective 1/1/95; 93-24-114, § 296-17-875, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 92-24-063, § 296-17-875, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-875, filed 11/27/91, effective 1/1/92; 90-24-042, § 296-17-875, filed 11/30/90, effective 1/1/91; 89-24-051 (Order 89-22), § 296-17-875, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035 and 51.04.020. 88-24-012 (Order 88-30), § 296-17-875, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035. 87-24-060 (Order 87-26), § 296-17-875, filed 12/1/87, effective 1/1/88. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 86-24-042 (Order 86-41), § 296-17-875, filed 11/26/86. Statutory Authority: RCW 51.16.035. 86-12-041 (Order 86-18), § 296-17-875, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-875, filed 11/27/85, effective 1/1/86; 84-24-016 (Order 84-23), § 296-17-875, filed 11/28/84, effective 1/1/85; 83-24-017 (Order 83-36), § 296-17-875, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-875, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-875, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-875, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-875, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-17-875, filed 11/30/77, effective 1/1/78; Order 76-36, § 296-17-875, filed 11/30/76; Order 75-38, § 296-17-875, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-875, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-875, filed 11/9/73, effective 1/1/74.]

WAC 296-17-880 Table II.

"B" and "W" Values

Maximum Claim Value = \$262,600
Average Death Value = \$180,015

Expected Losses	B	W
5,689 & Under	49,548	0.00
5,690 - 11,463	49,053	0.01
11,464 - 17,325	48,557	0.02
17,325 - 23,275	48,062	0.03
23,275 - 29,315	47,566	0.04
29,315 - 35,449	47,071	0.05
35,449 - 41,678	46,575	0.06
41,678 - 48,006	46,080	0.07
48,006 - 54,434	45,584	0.08
54,434 -	45,089	0.09

Workers' Compensation Insurance

296-17-885

60,965	-	67,601	44,593	0.10	854,464	-	882,067	14,864	0.70
67,602	-	74,346	44,098	0.11	882,068	-	910,695	14,369	0.71
74,347	-	81,203	43,602	0.12	910,696	-	940,405	13,873	0.72
81,204	-	88,175	43,107	0.13	940,406	-	971,260	13,378	0.73
88,176	-	95,265	42,611	0.14	971,261	-	1,003,330	12,882	0.74
95,266	-	102,475	42,116	0.15	1,003,331	-	1,036,688	12,387	0.75
102,476	-	109,810	41,620	0.16	1,036,689	-	1,071,416	11,892	0.76
109,811	-	117,273	41,125	0.17	1,071,417	-	1,107,600	11,396	0.77
117,274	-	124,867	40,629	0.18	1,107,601	-	1,145,336	10,901	0.78
124,868	-	132,597	40,134	0.19	1,145,337	-	1,184,727	10,405	0.79
132,598	-	140,465	39,638	0.20	1,184,728	-	1,225,886	9,910	0.80
140,466	-	148,477	39,143	0.21	1,225,887	-	1,268,937	9,414	0.81
148,478	-	156,636	38,647	0.22	1,268,938	-	1,314,014	8,919	0.82
156,637	-	164,947	38,152	0.23	1,314,015	-	1,361,265	8,423	0.83
164,948	-	173,414	37,656	0.24	1,361,266	-	1,410,855	7,928	0.84
173,415	-	182,042	37,161	0.25	1,410,856	-	1,462,962	7,432	0.85
182,043	-	190,837	36,666	0.26	1,462,963	-	1,517,786	6,937	0.86
190,838	-	199,802	36,170	0.27	1,517,787	-	1,575,546	6,441	0.87
199,803	-	208,944	35,675	0.28	1,575,547	-	1,636,487	5,946	0.88
208,945	-	218,268	35,179	0.29	1,636,488	-	1,700,883	5,450	0.89
218,269	-	227,779	34,684	0.30	1,700,884	-	1,769,037	4,955	0.90
227,780	-	237,485	34,188	0.31	1,769,038	-	1,841,292	4,459	0.91
237,486	-	247,390	33,693	0.32	1,841,293	-	1,918,032	3,964	0.92
247,391	-	257,503	33,197	0.33	1,918,033	-	1,999,691	3,468	0.93
257,504	-	267,829	32,702	0.34	1,999,692	-	2,086,761	2,973	0.94
267,830	-	278,376	32,206	0.35	2,086,762	-	2,179,801	2,477	0.95
278,377	-	289,152	31,711	0.36	2,179,802	-	2,279,452	1,982	0.96
289,153	-	300,164	31,215	0.37	2,279,453	-	2,386,448	1,486	0.97
300,165	-	311,420	30,720	0.38	2,386,449	-	2,501,636	991	0.98
311,421	-	322,930	30,224	0.39	2,501,637	-	2,625,999	495	0.99
322,931	-	334,702	29,729	0.40	2,626,000 & Over		0	0	1.00
334,703	-	346,746	29,233	0.41					
346,747	-	359,071	28,738	0.42					
359,072	-	371,689	28,242	0.43					
371,690	-	384,609	27,747	0.44					
384,610	-	397,844	27,251	0.45					
397,845	-	411,406	26,756	0.46					
411,407	-	425,307	26,260	0.47					
425,308	-	439,561	25,765	0.48					
439,562	-	454,182	25,269	0.49					
454,183	-	469,184	24,774	0.50					
469,185	-	484,584	24,279	0.51					
484,585	-	500,398	23,783	0.52					
500,399	-	516,644	23,288	0.53					
516,645	-	533,339	22,792	0.54					
533,340	-	550,504	22,297	0.55					
550,505	-	568,160	21,801	0.56					
568,161	-	586,327	21,306	0.57					
586,328	-	605,030	20,810	0.58					
605,031	-	624,294	20,315	0.59					
624,295	-	644,143	19,819	0.60					
644,144	-	664,608	19,324	0.61					
664,609	-	685,716	18,828	0.62					
685,717	-	707,500	18,333	0.63					
707,501	-	729,994	17,837	0.64					
729,995	-	753,234	17,342	0.65					
753,235	-	777,258	16,846	0.66					
777,259	-	802,107	16,351	0.67					
802,108	-	827,826	15,855	0.68					
827,827	-	854,463	15,360	0.69					

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-880, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-880, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-880, filed 12/1/97, effective 1/1/98; 96-24-063, § 296-17-880, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.04.020, 95-23-080, § 296-17-880, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-880, filed 11/28/94, effective 1/1/95; 93-24-114, § 296-17-880, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 92-24-063, § 296-17-880, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-880, filed 11/27/91, effective 1/1/92; 90-24-042, § 296-17-880, filed 11/30/90, effective 1/1/91; 89-24-051 (Order 89-22), § 296-17-880, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035 and 51.04.020, 88-24-012 (Order 88-30), § 296-17-880, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035, 87-24-060 (Order 87-26), § 296-17-880, filed 12/1/87, effective 1/1/88. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 86-24-042 (Order 86-41), § 296-17-880, filed 11/26/86. Statutory Authority: RCW 51.16.035, 85-24-032 (Order 85-33), § 296-17-880, filed 11/27/85, effective 1/1/86; 84-24-016 (Order 84-23), § 296-17-880, filed 11/28/84, effective 1/1/85; 83-24-017 (Order 83-36), § 296-17-880, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-880, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-880, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-880, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035, 79-12-086 (Order 79-18), § 296-17-880, filed 11/30/79, effective 1/1/80. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 78-12-043 (Order 78-23), § 296-17-880, filed 11/27/78, effective 1/1/79; Order 77-27, § 296-17-880, filed 11/30/77, effective 1/1/78; Order 76-36, § 296-17-880, filed 11/30/76; Order 75-38, § 296-17-880, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-880, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-880, filed 11/9/73, effective 1/1/74.]

WAC 296-17-885 Table III.

Expected Loss Rates and D-Ratios for Indicated Fiscal Year				Class	1996	1997	1998	D-Ratio	
Expected Loss Rates in Dollars Per Worker Hour									
Class	1996	1997	1998	D-Ratio					
0101	1.1939	1.1467	0.9438	0.408	1007	0.2921	0.2832	0.2428	0.505
0103	1.5073	1.4525	1.2134	0.443	1101	0.4690	0.4578	0.4022	0.556
0104	0.8558	0.8231	0.6820	0.423	1102	1.0844	1.0456	0.8743	0.442
0105	1.0556	1.0246	0.8809	0.506	1103	0.6474	0.6271	0.5336	0.481
0106	1.1939	1.1467	0.9438	0.408	1104	0.3599	0.3529	0.3156	0.595
0107	0.9855	0.9500	0.7957	0.450	1105	0.7016	0.6806	0.5821	0.490
0108	0.8558	0.8231	0.6820	0.423	1106	0.2817	0.2752	0.2410	0.539
0112	0.5559	0.5373	0.4537	0.465	1108	0.4023	0.3927	0.3448	0.554
0201	2.3887	2.2871	1.8550	0.373	1109	0.7378	0.7190	0.6256	0.529
0202	2.3887	2.2871	1.8550	0.373	1301	0.3955	0.3849	0.3349	0.535
0210	0.8052	0.7756	0.6483	0.447	1303	0.1462	0.1426	0.1255	0.562
0212	0.7489	0.7197	0.5932	0.410	1304	0.0200	0.0195	0.0170	0.533
0214	0.9580	0.9248	0.7798	0.467	1305	0.3291	0.3200	0.2756	0.503
0217	0.9966	0.9621	0.8101	0.461	1401	0.4823	0.4692	0.4058	0.515
0219	0.9043	0.8716	0.7283	0.442	1404	0.4292	0.4177	0.3635	0.535
0301	0.5087	0.4954	0.4311	0.533	1405	0.3231	0.3142	0.2715	0.512
0302	1.6845	1.6105	1.3022	0.371	1501	0.3614	0.3519	0.3071	0.544
0303	1.6352	1.5683	1.2844	0.398	1507	0.3683	0.3588	0.3135	0.547
0306	0.8583	0.8259	0.6871	0.435	1701	0.6051	0.5872	0.5042	0.504
0307	0.6389	0.6189	0.5289	0.495	1702	1.4905	1.4290	1.1665	0.388
0308	0.4671	0.4563	0.4023	0.566	1703	0.3453	0.3297	0.2621	0.318
0403	1.3011	1.2588	1.0637	0.462	1704	0.6051	0.5872	0.5042	0.504
0502	1.2196	1.1728	0.9719	0.425	1801	0.6960	0.6701	0.5543	0.413
0504	1.2033	1.1569	0.9522	0.402	1802	0.6108	0.5932	0.5106	0.508
0506	3.5412	3.3986	2.7796	0.389	2002	0.5359	0.5235	0.4607	0.557
0507	2.7558	2.6539	2.2051	0.426	2004	0.5662	0.5548	0.4956	0.596
0508	2.5763	2.4610	1.9760	0.351	2005	0.2808	0.2749	0.2435	0.568
0509	1.5473	1.4834	1.2109	0.389	2007	0.3961	0.3844	0.3297	0.498
0510	1.2436	1.2000	1.0069	0.451	2008	0.2345	0.2280	0.1973	0.518
0511	1.1017	1.0649	0.9024	0.477	2009	0.2808	0.2749	0.2435	0.568
0512	1.1159	1.0777	0.9087	0.464	2101	0.5838	0.5661	0.4825	0.481
0513	0.6194	0.5992	0.5103	0.490	2102	0.3754	0.3666	0.3223	0.554
0514	1.0931	1.0603	0.9082	0.495	2104	0.2307	0.2263	0.2022	0.589
0515	2.8938	2.7752	2.2699	0.394	2105	0.5375	0.5234	0.4574	0.547
0516	1.2436	1.2000	1.0069	0.451	2106	0.2889	0.2816	0.2453	0.529
0517	1.4134	1.3687	1.1641	0.480	2201	0.2091	0.2034	0.1761	0.520
0518	1.3861	1.3306	1.0937	0.407	2202	0.4541	0.4435	0.3916	0.570
0519	1.5467	1.4937	1.2555	0.452	2203	0.2977	0.2921	0.2620	0.604
0520	1.3443	1.2905	1.0632	0.414	2204	0.2091	0.2034	0.1761	0.520
0521	1.0583	1.0176	0.8392	0.409	2401	0.3217	0.3152	0.2805	0.583
0601	0.4792	0.4653	0.4019	0.522	2903	0.5305	0.5191	0.4608	0.579
0602	0.3884	0.3782	0.3312	0.556	2904	0.6295	0.6120	0.5271	0.504
0603	0.7383	0.7097	0.5875	0.423	2905	0.4022	0.3950	0.3561	0.619
0604	0.9155	0.8881	0.7591	0.488	2906	0.2930	0.2855	0.2496	0.547
0606	0.2857	0.2797	0.2490	0.585	2907	0.4327	0.4220	0.3693	0.544
0607	0.3179	0.3085	0.2656	0.509	2908	0.8003	0.7776	0.6709	0.514
0608	0.2370	0.2306	0.1995	0.519	2909	0.3354	0.3275	0.2880	0.555
0701	1.6925	1.6123	1.2870	0.347	3101	0.6005	0.5798	0.4867	0.449
0803	0.3311	0.3227	0.2828	0.553	3102	0.1970	0.1924	0.1697	0.565
0901	1.3861	1.3306	1.0937	0.407	3103	0.6360	0.6135	0.5107	0.423
1002	0.7360	0.7151	0.6168	0.513	3104	0.4637	0.4486	0.3800	0.473
1003	0.7275	0.7070	0.6090	0.506	3105	0.6444	0.6306	0.5618	0.592
1004	0.4302	0.4160	0.3520	0.467	3303	0.2307	0.2254	0.1985	0.559
1005	5.3289	5.0987	4.1192	0.363	3304	0.4602	0.4497	0.3957	0.555
					3309	0.3272	0.3200	0.2833	0.570
					3401	0.3449	0.3348	0.2875	0.502
					3402	0.3492	0.3406	0.2988	0.553
					3403	0.1657	0.1606	0.1367	0.478
					3404	0.3659	0.3575	0.3156	0.567

Workers' Compensation Insurance

296-17-885

Class	1996	1997	1998	D-Ratio	Class	1996	1997	1998	D-Ratio
3405	0.2018	0.1972	0.1746	0.576	4810	0.1170	0.1144	0.1005	0.542
3406	0.2045	0.1997	0.1757	0.556	4811	0.1931	0.1893	0.1688	0.587
3407	0.3332	0.3249	0.2855	0.563	4812	0.2737	0.2672	0.2348	0.557
3408	0.1031	0.1008	0.0891	0.572	4813	0.1417	0.1382	0.1203	0.527
3409	0.0914	0.0897	0.0805	0.606	4900	0.3581	0.3467	0.2946	0.479
3410	0.1808	0.1773	0.1580	0.582	4901	0.0514	0.0500	0.0433	0.524
3411	0.3449	0.3348	0.2875	0.502	4902	0.0654	0.0639	0.0564	0.571
3412	0.3695	0.3586	0.3077	0.501	4903	0.0542	0.0529	0.0466	0.564
3413	0.4159	0.4056	0.3555	0.552	4904	0.0237	0.0232	0.0206	0.580
3414	0.4155	0.4042	0.3501	0.523	4905	0.2640	0.2592	0.2317	0.588
3415	0.4924	0.4787	0.4131	0.513	4906	0.0683	0.0668	0.0591	0.575
3501	0.7484	0.7243	0.6132	0.466	4907	0.0494	0.0481	0.0420	0.536
3503	0.2360	0.2322	0.2095	0.609	4908	0.1087	0.1081	0.1003	0.662
3506	0.8404	0.8091	0.6771	0.454	4909	0.0471	0.0466	0.0423	0.614
3509	0.3243	0.3185	0.2872	0.620	4910	0.3214	0.3137	0.2750	0.546
3510	0.3273	0.3200	0.2831	0.571	5001	3.9217	3.7561	3.0558	0.383
3511	0.5048	0.4917	0.4277	0.530	5002	0.4225	0.4118	0.3609	0.553
3512	0.3206	0.3148	0.2831	0.609	5003	1.2004	1.1526	0.9479	0.407
3513	0.3679	0.3588	0.3136	0.539	5004	1.0217	0.9900	0.8407	0.471
3602	0.0966	0.0949	0.0853	0.609	5005	0.7502	0.7217	0.5987	0.426
3603	0.4154	0.4056	0.3565	0.554	5006	1.2771	1.2277	1.0139	0.415
3604	0.9761	0.9536	0.8408	0.564	5101	0.7103	0.6964	0.6238	0.604
3605	0.3937	0.3836	0.3352	0.545	5103	0.6357	0.6236	0.5576	0.594
3701	0.1970	0.1924	0.1697	0.565	5106	0.6357	0.6236	0.5576	0.594
3702	0.3398	0.3326	0.2959	0.588	5108	0.5471	0.5353	0.4749	0.578
3708	0.4023	0.3911	0.3370	0.508	5109	0.5455	0.5284	0.4505	0.487
3802	0.1240	0.1221	0.1108	0.628	5201	0.2641	0.2570	0.2235	0.532
3808	0.3326	0.3232	0.2790	0.513	5204	0.6886	0.6681	0.5724	0.496
3901	0.1368	0.1345	0.1213	0.609	5206	0.3581	0.3467	0.2946	0.479
3902	0.3080	0.3011	0.2654	0.561	5207	0.1363	0.1344	0.1224	0.637
3903	1.0013	0.9759	0.8466	0.516	5208	0.6472	0.6300	0.5478	0.531
3905	0.1368	0.1345	0.1213	0.609	5209	0.5947	0.5785	0.5018	0.527
3906	0.3495	0.3411	0.2999	0.556	5301	0.0269	0.0262	0.0234	0.583
3909	0.1498	0.1471	0.1319	0.601	5305	0.0440	0.0433	0.0395	0.645
4002	0.7897	0.7681	0.6696	0.548	5306	0.0390	0.0382	0.0339	0.581
4101	0.2092	0.2046	0.1810	0.574	5307	0.3023	0.2945	0.2574	0.548
4103	0.2325	0.2294	0.2103	0.659	6103	0.0631	0.0622	0.0562	0.619
4107	0.1134	0.1108	0.0976	0.560	6104	0.2404	0.2359	0.2116	0.604
4108	0.1358	0.1321	0.1143	0.516	6105	0.1609	0.1568	0.1367	0.535
4109	0.1949	0.1905	0.1680	0.563	6107	0.0934	0.0916	0.0818	0.583
4201	0.3979	0.3861	0.3339	0.530	6108	0.3407	0.3349	0.3016	0.610
4301	0.6281	0.6127	0.5344	0.533	6109	0.0579	0.0565	0.0496	0.553
4302	0.4574	0.4448	0.3861	0.532	6110	0.3303	0.3223	0.2822	0.545
4304	0.5898	0.5753	0.5029	0.542	6201	0.2625	0.2543	0.2168	0.487
4305	0.7930	0.7701	0.6665	0.527	6202	0.5379	0.5227	0.4475	0.486
4401	0.3548	0.3444	0.2935	0.474	6203	0.0671	0.0664	0.0611	0.657
4402	0.5804	0.5661	0.4957	0.546	6204	0.1304	0.1279	0.1146	0.597
4404	0.3185	0.3095	0.2660	0.496	6205	0.1840	0.1802	0.1601	0.581
4501	0.1260	0.1231	0.1089	0.567	6206	0.1618	0.1588	0.1423	0.604
4502	0.0383	0.0374	0.0328	0.548	6207	1.1898	1.1689	1.0440	0.580
4504	0.0807	0.0794	0.0719	0.623	6208	0.2305	0.2258	0.1989	0.543
4601	0.5307	0.5166	0.4478	0.520	6209	0.2066	0.2027	0.1809	0.584
4802	0.1816	0.1770	0.1539	0.527	6301	0.1144	0.1104	0.0923	0.440
4803	0.1700	0.1667	0.1485	0.584	6302	0.1388	0.1354	0.1177	0.524
4804	0.4457	0.4358	0.3852	0.567	6303	0.0584	0.0569	0.0496	0.533
4805	0.2406	0.2350	0.2062	0.547	6304	0.1783	0.1918	0.0615	0.638
4806	0.0454	0.0442	0.0386	0.527	6305	0.0673	0.0684	0.1766	0.605
4808	0.3688	0.3581	0.3076	0.500	6306	0.2022	0.1981	0.1766	0.590
4809	0.2292	0.2245	0.2004	0.590	6308	0.0447	0.0438	0.1135	0.578

Class	1996	1997	1998	D-Ratio	Class	1996	1997	1998	D-Ratio
6309	0.1130	0.1278	0.1992	0.575	7111	0.3433	0.3352	0.2947	0.556
6402	0.2177	0.2216	0.1284	0.613	7112	0.4935	0.4824	0.4267	0.573
6403	0.1288	0.1441	0.1388	0.581	7113	0.4771	0.4662	0.4123	0.572
6404	0.1499	0.1545	0.3948	0.604	7114	0.5884	0.5814	0.5353	0.665
6405	0.4670	0.4545	0.3948	0.528	7115	0.4282	0.4201	0.3774	0.610
6406	0.0575	0.0604	0.1663	0.621	7116	0.4116	0.4020	0.3532	0.552
6407	0.1915	0.1875	0.1663	0.575	7117	0.8533	0.8384	0.7568	0.622
6408	0.2601	0.2549	0.2282	0.603	7118	1.1243	1.0992	0.9749	0.580
6409	0.4159	0.4056	0.3555	0.552	7119	1.5635	1.5281	1.3547	0.582
6410	0.1641	0.1597	0.1383	0.515	7120	4.2819	4.1663	3.6016	0.512
6501	0.0948	0.0934	0.0851	0.652	7121	4.2481	4.1311	3.5690	0.513
6502	0.0232	0.0226	0.0199	0.553	7201	0.8874	0.8617	0.7461	0.530
6503	0.0578	0.0562	0.0484	0.516	7202	0.0335	0.0325	0.0278	0.490
6504	0.3187	0.3141	0.2847	0.621	7203	0.1041	0.1021	0.0908	0.571
6505	0.0843	0.0825	0.0730	0.557	7204	0.0000	0.0000	0.0000	0.500
6506	0.0691	0.0715	0.2024	0.558	7301	0.4611	0.4466	0.3794	0.474
6508	0.2377	0.2324	0.2046	0.554	7302	0.5830	0.5687	0.4971	0.540
6509	0.2345	0.2294	0.2024	0.558	7307	0.4690	0.4592	0.4067	0.569
6510	0.2727	0.2653	0.2289	0.505	7308	0.2079	0.2050	0.1866	0.629
6511	0.2832	0.2768	0.2431	0.546	7309	0.1660	0.1637	0.1495	0.642
6601	0.1519	0.1491	0.1334	0.594					
6602	0.3542	0.3462	0.3054	0.562					
6603	0.2953	0.2883	0.2529	0.549					
6604	0.0524	0.0511	0.0443	0.509					
6605	0.2578	0.2556	0.2380	0.688					
6607	0.1427	0.1398	0.1247	0.586					
6608	0.3068	0.2964	0.2502	0.464					
6620	1.6084	1.5726	1.4009	0.597					
6704	0.0979	0.0960	0.0856	0.591					
6705	0.6298	0.6207	0.5653	0.637					
6706	0.3234	0.3173	0.2828	0.579					
6707	1.3625	1.3380	1.2018	0.603					
6708	5.8152	5.6516	4.7942	0.448					
6709	0.1660	0.1637	0.1495	0.642					
6801	0.2373	0.2317	0.2047	0.577					
6802	0.3478	0.3415	0.3066	0.603					
6803	0.6579	0.6298	0.5092	0.363					
6804	0.1812	0.1775	0.1587	0.597					
6809	4.3146	4.2483	3.8343	0.607					
6901	0.0447	0.0453	0.0440	0.756					
6902	0.6917	0.6640	0.5445	0.399					
6903	4.5443	4.3263	3.4170	0.311					
6904	0.2089	0.2046	0.1838	0.620					
6905	0.2474	0.2419	0.2151	0.591					
6906	0.1124	0.1130	0.1072	0.689					
6907	0.8930	0.8704	0.7620	0.551					
6908	0.4197	0.4100	0.3626	0.576					
6909	0.0864	0.0847	0.0756	0.595					
7100	0.0252	0.0245	0.0210	0.488					
7101	0.0252	0.0245	0.0210	0.488					
7102	3.3121	3.2662	2.9421	0.590					
7103	0.2809	0.2729	0.2359	0.519					
7104	0.0211	0.0208	0.0186	0.597					
7105	0.0208	0.0205	0.0186	0.636					
7106	0.1295	0.1268	0.1125	0.576					
7107	0.2177	0.2137	0.1918	0.603					
7108	0.1858	0.1831	0.1667	0.632					
7109	0.1289	0.1268	0.1146	0.616					
7110	0.2860	0.2772	0.2367	0.489					

Expected Loss Rates in Dollars Per Sq. Ft. of Wallboard Installed

Class	1996	1997	1998	D-Ratio
0522	0.0177	0.0170	0.0140	0.408
0523	0.0117	0.0113	0.0093	0.413
0524	0.0128	0.0122	0.0102	0.445
0525	0.0080	0.0077	0.0064	0.426
0526	0.0074	0.0071	0.0058	0.402
0527	0.0005	0.0005	0.0004	0.373
0528	0.0018	0.0018	0.0015	0.413
0529	0.0012	0.0011	0.0010	0.408
0530	0.0179	0.0172	0.0141	0.396
0531	0.0103	0.0099	0.0081	0.408
0532	0.0009	0.0009	0.0006	0.410
0533	0.0028	0.0027	0.0022	0.398
0534	0.0018	0.0018	0.0015	0.413
7900	0.0140	0.0133	0.0109	0.394
7901	0.0075	0.0071	0.0058	0.414

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-885, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-885, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-885, filed 12/1/97, effective 1/1/98; 96-24-063, § 296-17-885, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.16.035. 96-12-039, § 296-17-885, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.04.020. 95-23-080, § 296-17-885, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-885, filed 11/28/94, effective 1/1/95; 93-24-114, § 296-17-885, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 92-24-063, § 296-17-885, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-885, filed 11/27/91, effective 1/1/92; 91-12-014, § 296-17-885, filed 5/31/91, effective 7/1/91; 90-24-042, § 296-17-885, filed 11/30/90, effective 1/1/91; 90-13-018, § 296-17-885, filed 6/8/90, effective 7/9/90; 89-24-051 (Order 89-22), § 296-17-885, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.04.020(1). 89-16-001 (Order 89-07), § 296-17-885, filed 7/20/89, effective 8/20/89. Statutory Authority: RCW 51.16.035 and 51.04.020. 88-24-012 (Order 88-30), § 296-17-885, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035. 88-12-065 (Order 88-05), § 296-17-885, filed 5/31/88; 88-12-050 (Order 88-06), § 296-17-885, filed 5/31/88, effective 7/1/88; 88-06-047 (Order 87-33), § 296-17-885, filed 3/1/88; 87-24-060 (Order 87-26), § 296-17-885, filed 12/1/87, effective 1/1/88; 87-12-032 (Order 87-12), § 296-17-885, filed 5/29/87, effective

7/1/87. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 86-24-042 (Order 86-41), § 296-17-885, filed 11/26/86. Statutory Authority: RCW 51.16.035. 86-12-041 (Order 86-18), § 296-17-885, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-885, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-885, filed 2/28/85, effective 4/1/85; 84-24-016 (Order 84-23), § 296-17-885, filed 11/28/84, effective 1/1/85; 83-24-017 (Order 83-36), § 296-17-885, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-885, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-885, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-885, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-885, filed 11/30/79, effective 1/1/80. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-885, filed 11/27/78, effective 1/1/79, effective 1/1/80. Order 77-27, § 296-17-885, filed 11/30/77, effective 1/1/78; Emergency Order 77-25, § 296-17-885, filed 12/1/77; Order 77-10, § 296-17-885, filed 5/31/77; Order 76-36, § 296-17-885, filed 11/30/76; Order 76-18, § 296-17-885, filed 5/28/76, effective 7/1/76; Order 75-38, § 296-17-885, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-885, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-885, filed 11/9/73, effective 1/1/74.]

WAC 296-17-890 Table IV.

**Maximum experience modifications
for firms with no compensable accidents:**

Expected Loss Range	Maximum Experience Modification
2,485 & Lower	0.90
2,486 - 2,659	0.89
2,660 - 2,847	0.88
2,848 - 3,051	0.87
3,052 - 3,272	0.86
3,273 - 3,511	0.85
3,512 - 3,772	0.84
3,773 - 4,055	0.83
4,056 - 4,363	0.82
4,364 - 4,699	0.81
4,700 - 5,066	0.80
5,067 - 5,466	0.79
5,467 - 5,904	0.78
5,905 - 6,383	0.77
6,384 - 6,909	0.76
6,910 - 7,485	0.75
7,486 - 8,118	0.74
8,119 - 8,815	0.73
8,816 - 9,582	0.72
9,583 - 10,429	0.71
10,430 - 11,364	0.70
11,365 - 12,398	0.69
12,399 - 13,543	0.68
13,544 - 14,814	0.67
14,815 - 16,227	0.66
16,228 - 17,799	0.65
17,800 - 19,551	0.64
19,552 - 21,508	0.63
21,509 - 23,697	0.62
23,698 - 26,151	0.61
26,152 & Higher	0.60

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-890, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-890, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-890, filed 12/1/97,

effective 1/1/98; 96-24-063, § 296-17-890, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.04.020. 95-23-080, § 296-17-890, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-890, filed 11/28/94, effective 1/1/95; 93-24-114, § 296-17-890, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 92-24-063, § 296-17-890, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-890, filed 11/27/91, effective 1/1/92; 90-24-042, § 296-17-890, filed 11/30/90, effective 1/1/91; 89-24-051 (Order 89-22), § 296-17-890, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035 and 51.04.020. 88-24-012 (Order 88-30), § 296-17-890, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035. 87-24-060 (Order 87-26), § 296-17-890, filed 12/1/87, effective 1/1/88. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 86-24-042 (Order 86-41), § 296-17-890, filed 11/26/86. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-890, filed 11/27/85, effective 1/1/86; 84-24-016 (Order 84-23), § 296-17-890, filed 11/28/84, effective 1/1/85; 83-24-017 (Order 83-36), § 296-17-890, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-890, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-890, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-890, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-890, filed 11/30/79, effective 1/1/80.]

**WAC 296-17-895 Industrial insurance accident fund
base rates and medical aid base rates by class of industry.**
Industrial insurance accident fund and medical aid fund base
rates by class of industry shall be as set forth below.

Class	Base Rates Effective January 1, 2000	
	Accident Fund	Medical Aid Fund
0101	1.4810	0.4577
0103	1.8262	0.6143
0104	1.0473	0.3386
0105	1.1778	0.5060
0107	1.2067	0.3948
0108	1.0473	0.3386
0112	0.6448	0.2465
0201	2.9857	0.8855
0202	2.9857	0.8855
0210	0.9985	0.3136
0212	0.9109	0.2982
0214	1.1713	0.3871
0217	1.1911	0.4198
0219	1.0819	0.3771
0301	0.5386	0.2638
0302	2.2052	0.5609
0303	2.0698	0.5970
0306	1.0694	0.3290
0307	0.7365	0.2889
0308	0.4889	0.2486
0403	1.4257	0.6283
0502	1.5158	0.4691
0504	1.4086	0.5132
0506	4.2577	1.4303
0507	3.2528	1.1692
0508	3.2905	0.9007
0509	1.9403	0.5744
0510	1.4622	0.5360
0511	1.3130	0.4677
0512	1.3244	0.4755
0513	0.7452	0.2605
0514	1.1920	0.5367

0516	1.4622	0.5360	2905	0.4016	0.2299
0517	1.5787	0.6686	2906	0.3143	0.1497
0518	1.7400	0.5167	2907	0.4442	0.2338
0519	1.7700	0.6973	2908	0.8738	0.3957
0521	1.2547	0.4422	2909	0.3347	0.1877
0601	0.5556	0.2174	3101	0.6838	0.2725
0602	0.4468	0.1808	3102	0.2030	0.1068
0603	0.9189	0.2823	3103	0.6897	0.3074
0604	0.9710	0.4662	3104	0.5334	0.2092
0606	0.2812	0.1638	3105	0.6753	0.3453
0607	0.3519	0.1535	3303	0.2316	0.1282
0608	0.2497	0.1231	3304	0.4488	0.2646
0701	2.3470	0.4721	3309	0.3224	0.1870
0803	0.3611	0.1662	3402	0.3658	0.1845
0901	1.7400	0.5167	3403	0.1772	0.0830
1002	0.8033	0.3641	3404	0.3761	0.1989
1003	0.7624	0.3790	3405	0.2110	0.1076
1004	0.4858	0.1988	3406	0.2045	0.1140
1005	6.6700	1.9655	3407	0.3728	0.1622
1007	0.3400	0.1308	3408	0.1053	0.0566
1101	0.4888	0.2500	3409	0.0885	0.0537
1102	1.2820	0.4622	3410	0.1620	0.1136
1103	0.7271	0.3044	3411	0.3758	0.1700
1104	0.3456	0.2127	3412	0.4089	0.1784
1105	0.7534	0.3523	3414	0.4443	0.2116
1106	0.2639	0.1679	3415	0.5281	0.2497
1108	0.4156	0.2164	3501	0.8237	0.3608
1109	0.7450	0.4047	3503	0.2027	0.1552
1301	0.4355	0.1955	3506	1.0885	0.2990
1303	0.1571	0.0750	3509	0.3232	0.1857
1304	0.0201	0.0110	3510	0.3309	0.1816
1305	0.3350	0.1775	3511	0.5212	0.2697
1401	0.4982	0.2566	3512	0.3033	0.1928
1404	0.4682	0.2141	3513	0.3650	0.2059
1405	0.3274	0.1749	3602	0.0918	0.0579
1501	0.3981	0.1785	3603	0.4186	0.2302
1507	0.4046	0.1830	3604	0.9976	0.5332
1701	0.6762	0.2890	3605	0.4214	0.2020
1702	1.8518	0.5635	3701	0.2030	0.1068
1703	0.4091	0.1393	3702	0.3490	0.1860
1704	0.6762	0.2890	3708	0.4216	0.2095
1801	0.7950	0.3095	3802	0.1108	0.0793
1802	0.6686	0.3011	3808	0.3565	0.1684
2002	0.5340	0.3009	3901	0.1183	0.0891
2004	0.5687	0.3193	3902	0.3053	0.1743
2007	0.4276	0.1980	3903	0.9482	0.5856
2008	0.2457	0.1223	3905	0.1183	0.0891
2009	0.2635	0.1682	3906	0.3595	0.1892
2101	0.6212	0.2961	3909	0.1376	0.0924
2102	0.3743	0.2102	4002	0.9376	0.3490
2104	0.2116	0.1422	4101	0.2163	0.1133
2105	0.5992	0.2613	4103	0.2180	0.1434
2106	0.2858	0.1620	4107	0.1152	0.0622
2201	0.2216	0.1079	4108	0.1400	0.0722
2202	0.4816	0.2378	4109	0.1969	0.1081
2203	0.2920	0.1725	4201	0.4860	0.1659
2204	0.2216	0.1079	4301	0.6183	0.3550
2401	0.3079	0.1902	4302	0.5121	0.2198
2903	0.5289	0.2997	4304	0.6042	0.3201
2904	0.6471	0.3356	4305	0.9220	0.3592

Workers' Compensation Insurance

296-17-895

4401	0.3513	0.1956	6204	0.1214	0.0793
4402	0.5945	0.3142	6205	0.1820	0.1050
4404	0.3177	0.1750	6206	0.1589	0.0935
4501	0.1220	0.0731	6207	0.9702	0.8076
4502	0.0382	0.0214	6208	0.1820	0.1583
4504	0.0735	0.0505	6209	0.1844	0.1302
4601	0.5386	0.2885	6301	0.1303	0.0516
4802	0.1821	0.1003	6302	0.1337	0.0800
4803	0.1588	0.1028	6303	0.0584	0.0323
4804	0.4376	0.2549	6304	0.1693	0.1273
4805	0.2333	0.1386	6305	0.0623	0.0441
4806	0.0433	0.0264	6306	0.2000	0.1154
4808	0.3935	0.1873	6308	0.0443	0.0254
4809	0.2231	0.1332	6309	0.1223	0.0785
4810	0.1017	0.0746	6402	0.2307	0.1256
4811	0.1813	0.1162	6403	0.1312	0.0927
4812	0.2852	0.1460	6404	0.1445	0.0972
4813	0.1369	0.0816	6405	0.4945	0.2414
4900	0.4065	0.1652	6406	0.0558	0.0385
4901	0.0554	0.0259	6407	0.1836	0.1125
4902	0.0695	0.0342	6408	0.2677	0.1429
4903	0.0575	0.0282	6409	0.4427	0.2154
4904	0.0228	0.0138	6410	0.1609	0.0922
4905	0.2364	0.1665	6501	0.0962	0.0539
4906	0.0708	0.0369	6502	0.0227	0.0133
4907	0.0493	0.0275	6503	0.0660	0.0267
4908	0.0625	0.0912	6504	0.2662	0.2143
4909	0.0291	0.0379	6505	0.0719	0.0547
4910	0.3193	0.1804	6506	0.0676	0.0442
5001	4.9973	1.4029	6509	0.2173	0.1419
5002	0.4594	0.2129	6510	0.2701	0.1518
5003	1.4897	0.4589	6511	0.2628	0.1707
5004	1.0828	0.5182	6601	0.1411	0.0927
5005	0.9198	0.2971	6602	0.3517	0.2001
5006	1.5668	0.5027	6603	0.2948	0.1646
5101	0.7194	0.3975	6604	0.0471	0.0321
5103	0.6000	0.3818	6605	0.2050	0.1830
5106	0.6000	0.3818	6607	0.1360	0.0847
5108	0.5495	0.3058	6608	0.3576	0.1349
5109	0.6137	0.2556	6614	702.0000*	637.0000*
5201	0.2842	0.1337	6615	256.0000*	233.0000*
5204	0.7497	0.3395	6616	217.0000*	197.0000*
5206	0.4065	0.1652	6617	78.0000*	71.0000*
5207	0.1185	0.0891	6618	78.0000*	71.0000*
5208	0.6897	0.3322	6620	1.7802	0.8015
5209	0.6450	0.2979	6704	0.0947	0.0572
5301	0.0265	0.0153	6705	0.5606	0.4042
5305	0.0423	0.0264	6706	0.2828	0.2070
5306	0.0385	0.0223	6707	1.2593	0.8374
5307	0.3314	0.1505	6708	4.7253	3.8209
6103	0.0547	0.0412	6709	0.1444	0.1087
6104	0.2342	0.1404	6801	0.2634	0.1169
6105	0.1654	0.0865	6802	0.3198	0.2141
6107	0.0797	0.0609	6803	0.7992	0.2560
6108	0.3101	0.2127	6804	0.1818	0.1020
6109	0.0596	0.0313	6809	3.4753	2.9677
6110	0.3336	0.1821	6901	0.0000	0.0509
6201	0.2958	0.1227	6902	0.8522	0.2676
6202	0.5296	0.2996	6903	5.7734	1.5612
6203	0.0543	0.0466	6904	0.2367	0.1021

6905	0.2683	0.1267
6906	0.0000	0.1267
6907	0.9736	0.4491
6908	0.4520	0.2161
6909	0.0853	0.0495
7100	0.0245	0.0142
7101	0.0245	0.0142
7102	2.1935	2.5663
7103	0.3105	0.1370
7104	0.0191	0.0133
7105	0.0191	0.0129
7106	0.1261	0.0748
7107	0.2070	0.1303
7108	0.1596	0.1226
7109	0.1137	0.0828
7110	0.3177	0.1368
7111	0.3513	0.1871
7112	0.5100	0.2670
7113	0.4915	0.2584
7114	0.5173	0.3846
7115	0.4267	0.2441
7116	0.4110	0.2306
7117	0.8468	0.4927
7118	1.1730	0.6017
7119	1.6938	0.8014
7120	4.3145	2.3371
7121	4.4322	2.2277
7201	1.0542	0.3890
7202	0.0352	0.0173
7203	0.0871	0.0689
7204	0.0000	0.0000
7301	0.5007	0.2264
7302	0.5828	0.3244
7307	0.4416	0.2803
7308	0.1698	0.1426
7309	0.1444	0.1087

* These rates are calculated on a per license basis for parimutuel race tracks and are base rated.

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-895, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-895, filed 12/1/98, effective 1/1/99. Statutory Authority: RCW 51.16.035. 98-18-042, § 296-17-895, filed 8/28/98, effective 10/1/98. Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 97-24-062, § 296-17-895, filed 12/1/97, effective 1/1/98; 96-24-063, § 296-17-895, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.16.035. 96-12-039, § 296-17-895, filed 5/31/96, effective 7/1/96. Statutory Authority: RCW 51.16.035 and 51.32.073. 96-06-025, § 296-17-895, filed 2/28/96, effective 4/1/96. Statutory Authority: RCW 51.04.020. 95-23-080, § 296-17-895, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-895, filed 11/28/94, effective 1/1/95. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 94-12-051, § 296-17-895, filed 5/27/94, effective 7/1/94. Statutory Authority: RCW 51.04.020. 93-24-114, § 296-17-895, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-12-093, § 296-17-895, filed 5/31/93, effective 7/1/93; 92-24-063, § 296-17-895, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-895, filed 11/27/91, effective 1/1/92; 91-12-014, § 296-17-895, filed 5/31/91, effective 7/1/91; 90-24-042, § 296-17-895, filed 11/30/90, effective 1/1/91; 90-13-018, § 296-17-895, filed 6/8/90, effective 7/9/90; 89-24-051 (Order 89-22), § 296-17-895, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.04.020(1). 89-16-001 (Order 89-07), § 296-17-895, filed 7/20/89, effective 8/20/89. Statutory Authority: RCW 51.16.035 and 51.04.020. 88-24-012 (Order 88-30), § 296-17-895, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035. 88-12-065 (Order 88-05), § 296-17-895, filed 5/31/88; 88-12-050 (Order 88-06), § 296-17-895, filed 5/31/88, effective 7/1/88; 88-06-047 (Order 87-33), § 296-17-895, filed 3/1/88; 87-24-060 (Order 87-26), § 296-

17-895, filed 12/1/87, effective 1/1/88; 87-12-032 (Order 87-12), § 296-17-895, filed 5/29/87, effective 7/1/87. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 86-24-042 (Order 86-41), § 296-17-895, filed 11/26/86. Statutory Authority: RCW 51.16.035. 86-12-041 (Order 86-18), § 296-17-895, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-895, filed 11/27/85, effective 1/1/86; 85-13-046 (Order 85-13), § 296-17-895, filed 6/17/85; 85-06-026 (Order 85-7), § 296-17-895, filed 2/28/85, effective 4/1/85; 84-24-016 (Order 84-23), § 296-17-895, filed 11/28/84, effective 1/1/85. Statutory Authority: RCW 51.04.020(1). 84-12-048 (Order 84-12), § 296-17-895, filed 6/1/84. Statutory Authority: RCW 51.16.035. 83-24-017 (Order 83-36), § 296-17-895, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-895, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-895, filed 11/30/81, effective 1/1/82; 81-04-024 (Order 81-02), § 296-17-895, filed 1/30/81; 80-17-016 (Order 80-23), § 296-17-895, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-895, filed 11/30/79, effective 1/1/80. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-895, filed 11/27/78, effective 1/1/79; Order 77-27, § 296-17-895, filed 11/30/77, effective 1/1/78; Emergency Order 77-25, § 296-17-895, filed 12/1/77; Order 77-10, § 296-17-895, filed 5/31/77; Order 76-36, § 296-17-895, filed 11/30/76; Order 76-18, § 296-17-895, filed 5/28/76, effective 7/1/76; Order 75-38, § 296-17-895, filed 11/24/75, effective 1/1/76; Order 75-28, § 296-17-895, filed 8/29/75, effective 10/1/75; Order 74-40, § 296-17-895, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-895, filed 11/9/73, effective 1/1/74.]

WAC 296-17-89502 Industrial insurance accident fund, medical aid and supplemental pension rates by class of industry for nonhourly rated classifications. The base rates as set forth below are for classifications whose premium rates are based on units other than hours worked.

Base Rates Effective
January 1, 2000

Class	Accident Fund	Medical Aid Fund	Supplemental Pension Fund
0524	0.0161	0.0048	0.0004
0526	0.0094	0.0027	0.0004
0527	0.0007	0.0002	0.0001
0528	0.0023	0.0007	0.0001
0529	0.0015	0.0004	0.0001
0530	0.0227	0.0065	0.0004
0531	0.0132	0.0036	0.0004
0532	0.0011	0.0003	0.0001
0533	0.0035	0.0011	0.0001
0534	0.0023	0.0007	0.0001

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073. 99-24-055, § 296-17-89502, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-89502, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-89502, filed 12/1/97, effective 1/1/98; 97-12-011, § 296-17-89502, filed 5/27/97, effective 7/1/97; 97-06-007, § 296-17-89502, filed 2/24/97, effective 4/1/97.]

WAC 296-17-900 Premium discounts. (1) A premium discount is a reduction of premium, of a specified amount or percentage, which is earned by meeting certain requirements or conditions not required of all employers.

(2) The department may offer a specified group of employers a premium discount plan to encourage participation in a pilot project or other department program intended to evaluate or promote alternatives in premium reporting or loss control initiatives.

[Statutory Authority: RCW 51.16.035. 99-18-068, § 296-17-900, filed 8/31/99, effective 10/1/99; Order 73-22, § 296-17-900, filed 11/9/73, effective 1/1/74.]

WAC 296-17-90120 Qualifications for drug-free workplace discount. (1) Employers must maintain all industrial insurance accounts in good standing with the department, such that at the time of certification and for the duration of the certification period, no outstanding premium, penalties, or assessments are due and quarterly reporting of payroll has been made in accordance with WAC 296-17-31023. The department may at its discretion, determine that an employer is in good standing if the employer and the department agree upon a payment schedule or other arrangements satisfactory to the department for payment of the outstanding debt. Final determination of an employer's eligibility to participate in this discount program under this section rests with the department subject to review under chapter 51.52 RCW.

(2) An employer may not receive more than one premium discount. If participating in more than one program involving premium discounts, an employer will receive only the largest individual discount.

[Statutory Authority: RCW 51.16.035, 99-18-068, § 296-17-90120, filed 8/31/99, effective 10/1/99. Statutory Authority: 1996 c 127 § 13, 96-18-040, § 296-17-90120, filed 8/29/96, effective 9/29/96.]

WAC 296-17-920 Assessment for supplemental pension fund. The amount of 28.7 mills (\$.0287) shall be retained by each employer from the earnings of each worker for each hour or fraction thereof the worker is employed. The amount of money so retained from the employee shall be matched in an equal amount by each employer, except as otherwise provided in these rules, all such moneys shall be remitted to the department on or before the last day of January, April, July and October of each year for the preceding calendar quarter, provided self-insured employers shall remit to the department as provided under WAC 296-15-060. All such moneys shall be deposited in the supplemental pension fund.

[Statutory Authority: RCW 51.04.020, 51.16.035 and 51.32.073, 99-24-055, § 296-17-920, filed 11/29/99, effective 12/31/99; 98-24-094, § 296-17-920, filed 12/1/98, effective 1/1/99; 97-24-062, § 296-17-920, filed 12/1/97, effective 1/1/98; 96-24-063, § 296-17-920, filed 11/29/96, effective 1/1/97. Statutory Authority: RCW 51.16.035 and 51.32.073, 96-06-025, § 296-17-920, filed 2/28/96, effective 4/1/96. Statutory Authority: RCW 51.04.020, 95-23-080, § 296-17-920, filed 11/20/95, effective 1/1/96; 94-24-007, § 296-17-920, filed 11/28/94, effective 1/1/95; 93-24-114, § 296-17-920, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 92-24-063, § 296-17-920, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-920, filed 11/27/91, effective 1/1/92; 89-24-051 (Order 89-22), § 296-17-920, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.04.020 and 51.32.073, 87-04-006 (Order 86-49), § 296-17-920, filed 1/23/87. Statutory Authority: RCW 51.16.035, 86-12-041 (Order 86-18), § 296-17-920, filed 5/30/86, effective 7/1/86; 83-24-017 (Order 83-36), § 296-17-920, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-920, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-920, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-920, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035, 79-12-086 (Order 79-18), § 296-17-920, filed 11/30/79, effective 1/1/80. Statutory Authority: RCW 51.04.020(1) and 51.16.035, 78-12-043 (Order 78-23), § 296-17-920, filed 11/27/78, effective 1/1/79; Order 77-27, § 296-17-920, filed 11/30/77, effective 1/1/78; Order 77-10, § 296-17-920, filed 5/31/77; Order 76-36, § 296-17-920, filed 11/30/76; Order 75-38, § 296-17-920, filed 11/24/75, effective 1/1/76; Order 75-28, § 296-17-920, filed 8/29/75, effective 10/1/75; Order 74-40, § 296-17-920, filed 11/27/74, effective 1/1/75; Order 74-6, § 296-17-920, filed 1/23/74.]

**Chapter 296-20 WAC
MEDICAL AID RULES**

WAC

- 296-20-01002 Definitions.
- 296-20-02700 What is a medical coverage decision?
- 296-20-02701 Who makes medical coverage decisions?
- 296-20-02702 Who uses medical coverage decisions?
- 296-20-02703 How can I determine if a specific health care service or supply is the subject of a medical coverage decision?
- 296-20-02704 What criteria does the director or director's designee use to make medical coverage decisions?
- 296-20-02705 What are treatment and diagnostic guidelines and how are they related to medical coverage decisions?
- 296-20-02850 When may the department cover controversial, obsolete, investigational or experimental treatment?
- 296-20-030 Treatment not requiring authorization for accepted conditions.
- 296-20-03003 Repealed.
- 296-20-03010 What are the general principles the department uses to determine coverage on drugs and medications?
- 296-20-03011 What general limitations are in place for medications?
- 296-20-03012 Where can I find the department's outpatient drug and medication coverage decisions?
- 296-20-03013 Will the department or self-insurer pay for a denied outpatient drug in special circumstances?
- 296-20-03014 Which drugs have specific limitations?
- 296-20-03015 What steps may the department or self-insurer take when concerned about the amount or appropriateness of drugs and medications prescribed to the injured worker?
- 296-20-03016 Is detoxification and/or chemical dependency treatment covered?
- 296-20-03017 What information is needed for prescriptions and the physician's record?
- 296-20-03018 What inpatient drugs are covered?
- 296-20-03019 Under what conditions will the department or self-insurer pay for oral opioid treatment for chronic, noncancer pain?
- 296-20-03020 What are the authorization requirements for treatment of chronic, noncancer pain with opioids?
- 296-20-03021 What documentation is required to be submitted for continued coverage of opioids to treat chronic, noncancer pain?
- 296-20-03022 How long will the department or self-insurer continue to pay for opioids to treat chronic, noncancer pain?
- 296-20-03023 When may the department or self-insurer deny payment of opioid medications used to treat chronic, noncancer pain?
- 296-20-03024 Will the department or self-insurer pay for nonopioid medications for the treatment of chronic, noncancer pain?
- 296-20-06101 What reports are health care providers required to submit to the insurer?
- 296-20-135 Conversion factors.

**DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER**

- 296-20-03003 Drugs and medication. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-03003, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-03003, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-24-041 (Order 81-28), § 296-20-03003, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-03003, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-03003, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-03003, filed 11/24/76, effective 1/1/77.] Repealed by 00-01-040, filed 12/7/99, effective 1/20/00. Statutory Authority: RCW 51.04.020 and 51.04.030.

WAC 296-20-01002 Definitions. Acceptance, accepted condition: Determination by a qualified representative of the department or self-insurer that reimbursement for the diagnosis and curative or rehabilitative treatment of a claimant's medical condition is the responsibility of the department or self-insurer. The condition being accepted

must be specified by one or more diagnosis codes from the current edition of the International Classification of Diseases, Clinically Modified (ICD-CM).

Attendant care: Those personal care services that assist a worker with dressing, feeding, and personal hygiene to facilitate self-care and are provided in order to maintain the worker in their place of temporary or permanent residence consistent with their needs, abilities, and safety. These services may be provided by, but are not limited to, registered nurses, licensed practical nurses, registered nursing assistants, and other individuals such as family members.

Attending doctor report: This type of report may also be referred to as a "60 day" or "special" report. The following information must be included in this type of report. Also, additional information may be requested by the department as needed.

(1) The condition(s) diagnosed including ICD-9-CM codes and the objective and subjective findings.

(2) Their relationship, if any, to the industrial injury or exposure.

(3) Outline of proposed treatment program, its length, components, and expected prognosis including an estimate of when treatment should be concluded and condition(s) stable. An estimated return to work date should be included. The probability, if any, of permanent partial disability resulting from industrial conditions should be noted.

(4) If the worker has not returned to work, the attending doctor should indicate whether a vocational assessment will be necessary to evaluate the worker's ability to return to work and why.

(5) If the worker has not returned to work, a doctor's estimate of physical capacities should be included with the report. If further information regarding physical capacities is needed or required, a performance-based physical capacities evaluation can be requested. Performance-based physical capacities evaluations should be conducted by a licensed occupational therapist or a licensed physical therapist. Performance-based physical capacities evaluations may also be conducted by other qualified professionals who provided performance-based physical capacities evaluations to the department prior to May 20, 1987, and who have received written approval to continue supplying this service based on formal department review of their qualifications.

Authorization: Notification by a qualified representative of the department or self-insurer that specific proper and necessary treatment, services, or equipment provided for the diagnosis and curative or rehabilitative treatment of an accepted condition will be reimbursed by the department or self-insurer.

Average wholesale price (AWP): A pharmacy reimbursement formula by which the pharmacist is reimbursed for the cost of the product plus a mark-up. The AWP is an industry benchmark which is developed independently by companies that specifically monitor drug pricing.

Baseline price (BLP): Is derived by calculating the mean average for all NDC's (National Drug Code) in a specific product group, determining the standard deviation, and calculating a new mean average using all prices within one standard deviation of the original mean average. "Baseline

price" is a drug pricing mechanism developed and updated by First Data Bank.

Bundled codes: When a bundled code is covered, payment for them is subsumed by the payment for the codes or services to which they are incident. (An example is a telephone call from a hospital nurse regarding care of a patient. This service is not separately payable because it is included in the payment for other services such as hospital visits.) Bundled codes and services are identified in the fee schedules.

By report: BR (by report) in the value column of the fee schedules indicates that the value of this service is to be determined by report (BR) because the service is too unusual, variable or new to be assigned a unit value. The report shall provide an adequate definition or description of the services or procedures that explain why the services or procedures (e.g., operative, medical, radiological, laboratory, pathology, or other similar service report) are too unusual, variable, or complex to be assigned a relative value unit, using any of the following as indicated:

- (1) Diagnosis;
- (2) Size, location and number of lesion(s) or procedure(s) where appropriate;
- (3) Surgical procedure(s) and supplementary procedure(s);
- (4) Whenever possible, list the nearest similar procedure by number according to the fee schedules;
- (5) Estimated follow-up;
- (6) Operative time;
- (7) Describe in detail any service rendered and billed using an "unlisted" procedure code.

The department or self-insurer may adjust BR procedures when such action is indicated.

Chart notes: This type of documentation may also be referred to as "office" or "progress" notes. Providers must maintain charts and records in order to support and justify the services provided. "Chart" means a compendium of medical records on an individual patient. "Record" means dated reports supporting bills submitted to the department or self-insurer for medical services provided in an office, nursing facility, hospital, outpatient, emergency room, or other place of service. Records of service shall be entered in a chronological order by the practitioner who rendered the service. For reimbursement purposes, such records shall be legible, and shall include, but are not limited to:

- (1) Date(s) of service;
- (2) Patient's name and date of birth;
- (3) Claim number;
- (4) Name and title of the person performing the service;
- (5) Chief complaint or reason for each visit;
- (6) Pertinent medical history;
- (7) Pertinent findings on examination;
- (8) Medications and/or equipment/supplies prescribed or provided;
- (9) Description of treatment (when applicable);
- (10) Recommendations for additional treatments, procedures, or consultations;
- (11) X-rays, tests, and results; and
- (12) Plan of treatment/care/outcome.

Consultation examination report: The following information must be included in this type of report. Addi-

tional information may be requested by the department as needed.

(1) A detailed history to establish:

(a) The type and severity of the industrial injury or occupational disease.

(b) The patient's previous physical and mental health.

(c) Any social and emotional factors which may effect recovery.

(2) A comparison history between history provided by attending doctor and injured worker, must be provided with exam.

(3) A detailed physical examination concerning all systems affected by the industrial accident.

(4) A general physical examination sufficient to demonstrate any preexisting impairments of function or concurrent condition.

(5) A complete diagnosis of all pathological conditions including ICD-9-CM codes found to be listed:

(a) Due solely to injury.

(b) Preexisting condition aggravated by the injury and the extent of aggravation.

(c) Other medical conditions neither related to nor aggravated by the injury but which may retard recovery.

(d) Coexisting disease (arthritis, congenital deformities, heart disease, etc.).

(6) Conclusions must include:

(a) Type of treatment recommended for each pathological condition and the probable duration of treatment.

(b) Expected degree of recovery from the industrial condition.

(c) Probability, if any, of permanent disability resulting from the industrial condition.

(d) Probability of returning to work.

(7) Reports of necessary, reasonable X-ray and laboratory studies to establish or confirm the diagnosis when indicated.

Doctor: For these rules, means a person licensed to practice one or more of the following professions: Medicine and surgery; osteopathic medicine and surgery; chiropractic; naturopathic physician; podiatry; dentistry; optometry.

Only those persons so licensed may sign report of accident forms and time loss cards except as provided in chapter 296-20 WAC.

Emergent hospital admission: Placement of the worker in an acute care hospital for treatment of a work related medical condition of an unforeseen or rapidly progressing nature which if not treated in an inpatient setting, is likely to jeopardize the worker's health or treatment outcome.

Fatal: When the attending doctor has reason to believe a worker has died as a result of an industrial injury or exposure, the doctor should notify the nearest department service location or the self-insurer immediately. Often an autopsy is required by the department or self-insurer. If so, it will be authorized by the service location manager or the self-insurer. Benefits payable include burial stipend and monthly payments to the surviving spouse and/or dependents.

Fee schedules or maximum fee schedule(s): The fee schedules consist of, but are not limited to, the following:

(a) Health Care Financing Administration's Common Procedure Coding System Level I and II Codes, descriptions

and modifiers that describe medical and other services, supplies and materials.

(b) Codes, descriptions and modifiers developed by the department.

(c) Relative value units (RVUs), calculated or assigned dollar values, percent-of-allowed-charges (POAC), or diagnostic related groups (DRGs), that set the maximum allowable fee for services rendered.

(d) Billing instructions or policies relating to the submission of bills by providers and the payment of bills by the department or self-insurer.

(e) Average wholesale price (AWP), baseline price (BLP), and policies related to the purchase of medications.

Health services provider or provider: For these rules means any person, firm, corporation, partnership, association, agency, institution, or other legal entity providing any kind of services related to the treatment of an industrially injured worker. It includes, but is not limited to, hospitals, medical doctors, dentists, chiropractors, vocational rehabilitation counselors, osteopathic physicians, pharmacists, podiatrists, physical therapists, occupational therapists, massage therapists, psychologists, naturopathic physicians, and durable medical equipment dealers.

Home nursing: Those nursing services that are proper and necessary to maintain the worker in their place of temporary or permanent residence consistent with their needs, abilities, and safety. These services may be provided by, but are not limited to, home health care, and hospice agencies on either an hourly or intermittent basis.

Independent or separate procedure: Certain of the fee schedule's listed procedures are commonly carried out as an integral part of a total service, and as such do not warrant a separate charge. When such a procedure is carried out as a separate entity, not immediately related to other services, the indicated value for "independent procedure" is applicable.

Medical aid rules: The Washington Administrative Codes (WACs) that contain the administrative rules for medical and other services rendered to workers.

Modified work status: The worker is not able to return to their previous work, but is physically capable of carrying out work of a lighter nature. Workers should be urged to return to modified work as soon as reasonable as such work is frequently beneficial for body conditioning and regaining self confidence.

Under RCW 51.32.090, when the employer has modified work available for the worker, the employer must furnish the doctor and the worker with a statement describing the available work in terms that will enable the doctor to relate the physical activities of the job to the worker's physical limitations and capabilities. The doctor shall then determine whether the worker is physically able to perform the work described. The employer may not increase the physical requirements of the job without requesting the opinion of the doctor as to the worker's ability to perform such additional work. If after a trial period of reemployment the worker is unable to continue with such work, the worker's time loss compensation will be resumed upon certification by the attending doctor.

If the employer has no modified work available, the department should be notified immediately, so vocational

assessment can be conducted to determine whether the worker will require assistance in returning to work.

Nonemergent (elective) hospital admission: Placement of the worker in an acute care hospital for medical treatment of an accepted condition which may be safely scheduled in advance without jeopardizing the worker's health or treatment outcome.

Permanent partial disability: Any anatomic or functional abnormality or loss after maximum rehabilitation has been achieved, which is determined to be stable or nonprogressive at the time the evaluation is made. When the attending doctor has reason to believe a permanent impairment exists, the department or self-insurer should be notified. Specified disabilities (amputation or loss of function of extremities, loss of hearing or vision) are to be rated utilizing a nationally recognized impairment rating guide. Unspecified disabilities (internal injuries, spinal injuries, mental health, etc.) are to be rated utilizing the category system detailed under WAC 296-20-200 et al. for injuries occurring on or after October 1, 1974. **Under Washington law disability awards are based solely on physical or mental impairment due to the accepted injury or conditions without consideration of economic factors.**

Physician: For these rules, means any person licensed to perform one or more of the following professions: Medicine and surgery; or osteopathic medicine and surgery.

Practitioner: For these rules, means any person defined as a "doctor" under these rules, or licensed to practice one or more of the following professions: Audiology; physical therapy; occupational therapy; pharmacy; prosthetics; orthotics; psychology; nursing; physician or osteopathic assistant; and massage therapy.

Proper and necessary:

(1) The department or self-insurer pays for proper and necessary health care services that are related to the diagnosis and treatment of an accepted condition.

(2) Under the Industrial Insurance Act, "proper and necessary" refers to those health care services which are:

(a) Reflective of accepted standards of good practice, within the scope of practice of the provider's license or certification;

(b) Curative or rehabilitative. Care must be of a type to cure the effects of a work-related injury or illness, or it must be rehabilitative. Curative treatment produces permanent changes, which eliminate or lessen the clinical effects of an accepted condition. Rehabilitative treatment allows an injured or ill worker to regain functional activity in the presence of an interfering accepted condition. Curative and rehabilitative care produce long-term changes;

(c) Not delivered primarily for the convenience of the claimant, the claimant's attending doctor, or any other provider; and

(d) Provided at the least cost and in the least intensive setting of care consistent with the other provisions of this definition.

(3) The department or self-insurer stops payment for health care services once a worker reaches a state of maximum medical improvement. Maximum medical improvement occurs when no fundamental or marked change in an

accepted condition can be expected, with or without treatment. Maximum medical improvement may be present though there may be fluctuations in levels of pain and function. A worker's condition may have reached maximum medical improvement though it might be expected to improve or deteriorate with the passage of time. Once a worker's condition has reached maximum medical improvement, treatment that results only in temporary or transient changes is not proper and necessary. "Maximum medical improvement" is equivalent to "fixed and stable."

(4) In no case shall services which are inappropriate to the accepted condition or which present hazards in excess of the expected medical benefits be considered proper and necessary. Services that are controversial, obsolete, investigational or experimental are presumed not to be proper and necessary, and shall be authorized only as provided in WAC 296-20-03002(6) and 296-20-02850.

Regular work status: The injured worker is physically capable of returning to his/her regular work. It is the duty of the attending doctor to notify the worker and the department or self-insurer, as the case may be, of the specific date of release to return to regular work. Compensation will be terminated on the release date. Further treatment can be allowed as requested by the attending doctor if the condition is not stationary and such treatment is needed and otherwise in order.

Temporary partial disability: Partial time loss compensation may be paid when the worker can return to work on a limited basis or return to a lesser paying job is necessitated by the accepted injury or condition. The worker must have a reduction in wages of more than five percent before consideration of partial time loss can be made. No partial time loss compensation can be paid after the worker's condition is stationary. **All time loss compensation must be certified by the attending doctor based on objective findings.**

Termination of treatment: When treatment is no longer required and/or the industrial condition is stabilized, a report indicating the date of stabilization should be submitted to the department or self-insurer. This is necessary to initiate closure of the industrial claim. The patient may require continued treatment for conditions not related to the industrial condition; however, financial responsibility for such care must be the patient's.

Total permanent disability: Loss of both legs or arms, or one leg and one arm, total loss of eyesight, paralysis or other condition permanently incapacitating the worker from performing any work at any gainful employment. When the attending doctor feels a worker may be totally and permanently disabled, the attending doctor should communicate this information immediately to the department or self-insurer. A vocational evaluation and an independent rating of disability may be arranged by the department prior to a determination as to total permanent disability. Coverage for treatment does not usually continue after the date an injured worker is placed on pension.

Total temporary disability: Full-time loss compensation will be paid when the worker is unable to return to any type of reasonably continuous gainful employment as a direct result of an accepted industrial injury or exposure.

Unusual or unlisted procedure: Value of unlisted services or procedures should be substantiated "by report" (BR).

Utilization review: The assessment of a claimant's medical care to assure that it is proper and necessary and of good quality. This assessment typically considers the appropriateness of the place of care, level of care, and the duration, frequency or quantity of services provided in relation to the accepted condition being treated.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-039, § 296-20-01002, filed 12/7/99, effective 1/8/00. Statutory Authority: RCW 51.04.030, 70.14.050 and 51.04.020(4). 95-16-031, § 296-20-01002, filed 7/21/95, effective 8/22/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-01002, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-20-01002, filed 12/1/92, effective 1/1/93; 92-05-041, § 296-20-01002, filed 2/13/92, effective 3/15/92. Statutory Authority: RCW 51.04.020. 90-14-009, § 296-20-01002, filed 6/25/90, effective 8/1/90. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-01002, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-01002, filed 11/30/87, effective 1/1/88; 86-20-074 (Order 86-36), § 296-20-01002, filed 10/1/86, effective 11/1/86; 83-24-016 (Order 83-35), § 296-20-01002, filed 11/30/83, effective 1/1/84; 83-16-066 (Order 83-23), § 296-20-01002, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-01002, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-01002, filed 12/23/80, effective 3/1/81.]

WAC 296-20-02700 What is a medical coverage decision? A medical coverage decision is a general policy decision by the director or the director's designee to include or exclude a specific health care service or supply as a covered benefit. These decisions are made to insure quality of care and prompt treatment of workers. Medical coverage decisions include, but are not limited to, decisions on health care services and supplies rendered for the purpose of diagnosis, treatment or prognosis, such as:

- Ancillary services including, but not limited to, home health care services, ambulatory services, specific rehabilitative modalities;
- Devices;
- Diagnostic tests;
- Drugs, biologics, and other therapeutic modalities;
- Durable medical equipment;
- Procedures;
- Prognostic tests; and
- Supplies.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02700, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02701 Who makes medical coverage decisions? The director or the director's designee makes medical coverage decisions.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02701, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02702 Who uses medical coverage decisions? Self-insured employers and state fund claim managers use medical coverage decisions to help them make claim-specific decisions. For example, the director or director's designee may find that a particular medical device is effective in treating a specific category of injuries. The medical coverage decision might be that that device is a covered benefit for that category of injuries. The self-insured employer or state fund

claim manager would make a claim-specific decision to pay or deny payment for that device based on a number of factors, one of which is whether the accepted condition on that claim matches the approved category of injuries in the medical coverage decision.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02702, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02703 How can I determine if a specific health care service or supply is the subject of a medical coverage decision? (1) The *Medical Aid Rules*, fee schedules, and provider bulletins and updates specify covered and noncovered services and supplies.

(2) For additional information on existing medical coverage decisions or if you have a question about a new and emerging technology, device, or off-label use of a drug, contact the office of the medical director at:

Department of Labor and Industries
Office of the Medical Director
P.O. Box 44321
Olympia, WA 98504-4321

(3) For questions about what will be authorized on a specific claim, contact the self-insured employer or state fund claim manager.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02703, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02704 What criteria does the director or director's designee use to make medical coverage decisions? (1) In making medical coverage decisions, the director or the director's designee considers information from a variety of sources. These sources include, but are not limited to:

- Scientific evidence;
- National and community-based opinions;
- Informal syntheses of provider opinion;
- Experience of the department and other entities;
- Regulatory status.

Because of the unique nature of each health care service, the type, quantity and quality of the information available for review may vary. The director or director's designee weighs the quality of the available evidence in making medical coverage decisions.

(2) Scientific evidence.

(a) "Scientific evidence" includes reports and studies published in peer-reviewed scientific and clinical literature. The director or the director's designee will consider the nature and quality of the study, its methodology and rigorosity of design, as well as the quality of the journal in which the study was published.

• For treatment services, studies addressing safety, efficacy, and effectiveness of the treatment or procedure for its intended use will be considered.

• For diagnostic devices or procedures, studies addressing safety, technical capacity, accuracy or utility of the device or procedure for its intended use will be considered.

(b) The greatest weight will be given to the most rigorously designed studies and on those well-designed studies that are reproducible. The strength of the design will depend

on such scientifically accepted methodological principles as randomization, blinding, appropriateness of outcomes, spectrum of cases and controls, appropriate power to detect differences, magnitude and significance of effect. Additional consideration will be given to those studies that focus on sustained health and functional outcomes of workers with occupational conditions rather than unsustained clinical improvements.

(3) National and community-based opinion.

(a) "National opinion" includes, but is not limited to, syntheses of clinical issues that may take the form of published reports in the scientific literature, national consensus documents, formalized documents addressing standards of practice, practice parameters from professional societies or commissions, and technology assessments produced by independent evidence-based practice centers.

The director or the director's designee will consider the nature and quality of the process used to reach consensus or produce the synthesis of expert opinion. This consideration will include, but may not be limited to, the qualifications of participants, potential biases of sponsoring organizations, the inclusion of graded scientific information in the deliberations, the explicit nature of the document, and the processes used for broader review.

(b) "Community-based opinion" refers to advice and recommendations of formal committees made up of clinical providers within the state of Washington. As appropriate to the subject matter, this may include recommendations from the department's formal advisory committees:

- The industrial insurance and rehabilitation committee of the Washington State Medical Association, which includes a representative from the Washington Osteopathic Medical Association;

- The chiropractic advisory committee.

(4) "Informal syntheses of provider opinion" includes, but is not limited to, professional opinion surveys.

(5) Experience of the department and other entities.

The director or director's designee may consider data from a variety of sources including the department, other state agencies, federal agencies and other insurers regarding studies, experience and practice with past coverage. Examples of these include, but are not limited to, formal outcome studies, cost-benefit analyses, and adverse event, morbidity or mortality data.

(6) Regulatory status.

The director or director's designee will consider related licensing and approval processes of other state and federal regulatory agencies. This includes, but is not limited to:

- The federal food and drug administration's (FDA) regulation of drugs and medical devices (21 U.S.C. 301 et seq. and 21 CFR Chapter 1, Subchapters C, D, & H consistent with the purposes of this chapter, and as now or hereafter amended); and

- The Washington state department of health's regulation of scope of practice and standards of practice for licensed health care professionals regulated under Title 18 RCW.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02704, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02705 What are treatment and diagnostic guidelines and how are they related to medical coverage decisions? (1) Treatment and diagnostic guidelines are recommendations for the diagnosis or treatment of accepted conditions. These guidelines are intended to guide providers through the range of the many treatment or diagnostic options available for a particular medical condition. Treatment and diagnostic guidelines are a combination of the best available scientific evidence and a consensus of expert opinion.

(2) The department may develop treatment or diagnostic guidelines to improve outcomes for workers receiving covered health services. As appropriate to the subject matter, the department may develop these guidelines in collaboration with the department's formal advisory committees:

- The industrial insurance and rehabilitation committee of the Washington State Medical Association, which includes a representative from the Washington Osteopathic Medical Association;

- The chiropractic advisory committee.

(3) In the process of implementing these guidelines, the department may find it necessary to make a formal medical coverage decision on one or more of the treatment or diagnostic options. The department, not the advisory committees, is responsible for implementing treatment guidelines and for making coverage decisions that result from such implementation.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02705, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02850 When may the department cover controversial, obsolete, investigational or experimental treatment? (1) The department or self-insurer will not authorize nor pay for treatment measures of a controversial, obsolete, investigational or experimental nature. (See WAC 296-20-03002.) Under certain conditions, the director or the director's designee may determine that such treatment is appropriate. In making such a decision, the director or director's designee will consider factors including, but not limited to, the following:

(a) Scientific studies investigating the safety and efficacy of the treatment are incomplete, or if completed, have conflicting conclusions, and:

- Preliminary data indicate the treatment or diagnostic procedure or device has improved net health and functional outcomes; and

- No alternative treatment or diagnostic is available; or

(b) The treatment or diagnostic procedure or device is prescribed as part of:

- A controlled, clinical trial that has been reviewed and approved by an institutional review board that was established in accordance with the federal Department of Health and Human Services (DHHS) regulations (45 CFR Part 46 consistent with the purposes of this chapter, and as now or hereafter amended); and

- For medical devices not yet cleared for marketing, the clinical evaluation has an approved investigational device exemption (IDE) in accordance with the federal Food and Drug Administration (FDA) regulations (21 CFR Parts 50, 56, and 812 consistent with the purposes of this chapter, and as now or hereafter amended); and

• For drugs not yet cleared for marketing, the clinical evaluation has been approved in accordance with the federal Food and Drug Administration (FDA) regulations (21 CFR Part 312 consistent with the purposes of this chapter, and as now or hereafter amended); or

(c) The usually indicated procedure or diagnostic test would likely be harmful for the patient because of other unrelated conditions.

(2) The health care provider must submit a written request and obtain approval from the department or self-insurer, prior to using a controversial, obsolete, investigational, or experimental treatment. The written requests must contain a description of the treatment, the reason for the request, potential risks and expected benefits, length of care and estimated cost of treatment.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02850, filed 12/7/99, effective 1/8/00.]

WAC 296-20-030 Treatment not requiring authorization for accepted conditions. (1) A maximum of twenty office calls for the treatment of the industrial condition, during the first sixty days, following injury. Subsequent office calls must be authorized. Reports of treatment rendered must be filed at sixty day intervals to include number of office visits to date. See chapter 296-20 WAC and department policies for report requirements and further information.

(2) Initial diagnostic x-rays necessary for evaluation and treatment of the industrial injury or condition. See WAC 296-20-121 for further information.

(3) The first twelve physical therapy treatments as provided by chapters 296-21, 296-23, and 296-23A WAC, upon consultation by the attending doctor or under his direct supervision. Additional physical therapy treatment must be authorized and the request substantiated by evidence of improvement. In no case will the department or self-insurer pay for inpatient hospitalization of a claimant to receive physical therapy treatment only. USE OF DIAPULSE, THERMATIC (standard model only), SPECTROWAVE AND SUPERPULSE MACHINES AND IONTOPHORESIS IS NOT AUTHORIZED FOR WORKERS ENTITLED TO BENEFITS UNDER THE INDUSTRIAL INSURANCE ACT.

(4) Routine laboratory studies reasonably necessary for diagnosis and/or treatment of the industrial condition. Other special laboratory studies require authorization.

(5) Routine standard treatment measures rendered on an emergency basis or in connection with minor injuries not otherwise requiring authorization.

(6) Consultation with specialist when indicated. See WAC 296-20-051 for consultation guidelines.

(7) Diagnostic or therapeutic nerve blocks. See WAC 296-20-03001 for restrictions.

(8) Intra-articular injections. See WAC 296-20-03001 for restrictions.

(9) Myelogram if prior to emergency surgery.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-030, filed 12/7/99, effective 1/20/00. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-030, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-030, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-030, filed 11/30/81, effective 1/1/82; 81-01-100

(Order 80-29), § 296-20-030, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-030, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-030, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-030, filed 1/30/74; Order 71-6, § 296-20-030, filed 6/1/71; Order 70-12, § 296-20-030, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-030, filed 11/27/68, effective 1/1/69.]

WAC 296-20-03003 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-20-03010 What are the general principles the department uses to determine coverage on drugs and medications? The department or self-insurer pays for drugs that are deemed proper and necessary to treat the industrial injury or occupational disease accepted under the claim. In general, the department will consider coverage for all FDA approved drugs for stated indications. The department or self-insurer may pay for prescriptions for off label indications when used within current medical standards and prescribed in compliance with published contraindications, precautions and warnings.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03010, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03011 What general limitations are in place for medications? (1) **Amount dispensed.** The department or self-insurer will pay for no more than a thirty-day supply of a medication dispensed at any one time.

(2) **Over-the-counter drugs.** Prescriptions for over-the-counter items may be paid. Special compounding fees for over-the-counter items are not payable.

(3) **Generic drugs.** Prescriptions are to be written for generic drugs unless the attending physician specifically indicates that substitution is not permitted. For example: The patient cannot tolerate substitution. Pharmacists are instructed to fill with generic drugs unless the attending physician specifically indicates substitution is not permitted.

(4) **Prescriptions for unrelated medical conditions.** The department or self-insurer may consider temporary coverage of prescriptions for conditions not related to the industrial injury when such conditions are retarding recovery. Any treatment for such conditions must have prior authorization per WAC 296-20-055.

(5) **Pension cases.** Once the worker is placed on a pension, the department or self-insurer may pay for only those drugs and medications authorized for continued medical treatment for conditions previously accepted by the department. Authorization for continued medical and surgical treatment is at the sole discretion of the supervisor of industrial insurance and must be authorized before the treatment is rendered. In such pension cases, the department or self-insurer cannot pay for scheduled drugs used to treat continuing pain resulting from an industrial injury or occupational disease.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03011, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03012 Where can I find the department's outpatient drug and medication coverage decisions? The department's outpatient drug and medication coverage decisions are contained in the department's formulary,

as developed by the department in collaboration with the Washington State Medical Association's Industrial Insurance and Rehabilitation Committee.

In the formulary, drugs are listed in the following categories:

- **Allowed**

Drugs used routinely for treating accepted industrial injuries and occupational illnesses.

Example: Nonscheduled drugs and other medications during the acute phase of treatment for the industrial injury or condition.

- **Prior authorization required**

Drugs used routinely to treat conditions not normally accepted as work related injuries, drugs which are used to treat unrelated conditions retarding recovery from the accepted condition on the claim, and drugs for which less expensive alternatives exist.

Example: All drugs to treat hypertension because hypertension is not normally an accepted industrial condition.

- **Denied**

Drugs not normally used for treating industrial injuries or not normally dispensed by outpatient pharmacies.

Example: Most hormones, most nutritional supplements.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03012, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03013 Will the department or self-insurer pay for a denied outpatient drug in special circumstances? Some of the drugs that are routinely denied may be covered in special circumstances. Requests for coverage under special circumstances require authorization prior to treatment. Examples of drugs that may be covered in special circumstances include:

- Drugs and medications to treat unrelated conditions when retarding recovery;

- Special treatments for unique catastrophic injuries.

The department may require written documentation to support the request.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03013, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03014 Which drugs have specific limitations? (1) **Injectables.** Prescriptions for injectable opioids or other analgesics, sedatives, antihistamines, tranquilizers, psychotropics, vitamins, minerals, food supplements, and hormones are not covered.

Exceptions: The department or self-insurer covers injectable medications under the following circumstances.

(a) Indicated injectable drugs for the following:

- Inpatients; or

- During emergency treatment of a life-threatening condition/injury; or

- During outpatient treatment of severe soft tissue injuries, burns or fractures when needed for dressing or cast changes; or

- During the perioperative period and the postoperative period, not to exceed forty-eight hours from the time of discharge.

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(b) Prescriptions of injectable insulin, heparin, anti-migraine medications, or impotency treatment, when proper and necessary.

(2) **Noninjectable scheduled drugs administered by other than the oral route.** Nonoral routes of administration of scheduled drugs that result in systemic availability of the drug equivalent to injectable routes will also not be covered.

(3) **Sedative-hypnotics.** During the chronic stage of an industrial injury or occupational disease, payment for scheduled sedatives and hypnotics will not be authorized.

(4) **Benzodiazepines.** Payment for prescriptions for benzodiazepines are limited to the following types of patients:

- Hospitalized patients;

- Claimants with an accepted psychiatric disorder for which benzodiazepines are indicated;

- Claimants with an unrelated psychiatric disorder that is retarding recovery but which the department or self-insurer has temporarily authorized treatment (see WAC 296-20-055) and for which benzodiazepines are indicated; and

- Other outpatients for not more than thirty days for the life of the claim.

(5) **Cancer.** When cancer or any other end-stage disease is an accepted condition, the department or self-insurer may authorize payment for any indicated scheduled drug and by any indicated route of administration.

(6) **Spinal cord injuries.** When a spinal cord injury is an accepted condition, the department or self-insurer may authorize payment for anti-spasticity medications by any indicated route of administration (e.g., some benzodiazepines, Baclofen). Prior authorization is required.

Note: See the department formulary for specific limitations and prior authorization requirements of other drugs.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03014, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03015 What steps may the department or self-insurer take when concerned about the amount or appropriateness of drugs and medications prescribed to the injured worker? (1) The department or self-insurer may take any or all of the following steps when concerned about the amount or appropriateness of drugs the patient is receiving:

- Notify the attending physician of concerns regarding the medications such as drug interactions, adverse reactions, prescriptions by other providers;

- Require that the attending physician send a treatment plan addressing the drug concerns;

- Request a consultation from an appropriate specialist;

- Request that the attending physician consider reducing the prescription, and provide information on chemical dependency programs;

- Limit payment for drugs on a claim to one prescribing doctor.

(2) If the attending physician or worker does not comply with these requests, or if the probability of imminent harm to the worker is high, the department or self-insurer may discontinue payment for the drug after adequate prior notification has been given to the worker, pharmacy and physician.

(3) Physician failure to reduce or terminate prescription of controlled substances, habit forming or addicting medications, or dependency inducing medications, after department or self-insurer request to do so for an injured worker may result in a transfer of the worker to another physician of the worker's choice. (See WAC 296-20-065.)

(4) Other corrective actions may be taken in accordance with WAC 296-20-015, Who may treat.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03015, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03016 Is detoxification and/or chemical dependency treatment covered? The department or self-insurer may pay for detoxification and/or chemical dependency treatment in the following circumstances:

- The injured worker becomes dependent or toxic on medication prescribed for an accepted condition on the claim; or
- The injured worker becomes dependent or toxic due to medications prescribed for a condition retarding recovery of the accepted condition on the claim; or
- The injured worker is dependent or toxic due to medications for an unrelated condition, but that dependency or toxicity is retarding recovery of the accepted condition.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03016, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03017 What information is needed for prescriptions and the physician's record? Prescriptions must include the department authorized provider number for the prescribing physician and the physician's signature. The physician's record must contain the name and reason for the medication, the dosage, quantity prescribed and/or dispensed, the route of administration, the frequency, the starting and stopping dates, the expected outcome of treatment, and any adverse effects that occur. Please refer to WAC 296-20-03021 and 296-20-03022 for additional documentation requirements when treating chronic, noncancer pain.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03017, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03018 What inpatient drugs are covered? In general, the department or self-insured employer pays for most drugs in an inpatient hospital setting. Please see WAC 296-20-075, Hospitalization.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03018, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03019 Under what conditions will the department or self-insurer pay for oral opioid treatment for chronic, noncancer pain? Chronic, noncancer pain may develop after an acute injury episode. It is defined as pain that typically persists beyond two to four months following the injury.

The department or self-insurer may pay for oral opioids for the treatment of chronic, noncancer pain caused by an accepted condition when that treatment is proper and necessary. See WAC 296-20-01002 for the definition of "proper and necessary" health care services.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03019, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03020 What are the authorization requirements for treatment of chronic, noncancer pain with opioids? No later than thirty days after the attending physician begins treating the worker with opioids for chronic, noncancer pain, the attending physician must submit a written report to the department or self-insurer in order for the department or self-insurer to pay for such treatment. The written report must include the following:

- A treatment plan with time-limited goals;
- A consideration of relevant prior medical history;
- A summary of conservative care rendered to the worker that focused on reactivation and return to work;
- A statement on why prior or alternative conservative measures may have failed or are not appropriate as sole treatment;
- A summary of any consultations that have been obtained, particularly those that have addressed factors that may be barriers to recovery;
- A statement that the attending physician has conducted appropriate screening for factors that may significantly increase the risk of abuse or adverse outcomes (e.g., a history of alcohol or other substance abuse); and
- An opioid treatment agreement that has been signed by the worker and the attending physician. This agreement must be renewed every six months. The treatment agreement must outline the risks and benefits of opioid use, the conditions under which opioids will be prescribed, the physician's need to document overall improvement in pain and function, and the worker's responsibilities.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03020, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03021 What documentation is required to be submitted for continued coverage of opioids to treat chronic, noncancer pain? In addition to the general documentation required by the department or self-insurer, the attending physician must submit the following information at least every sixty days when treating with opioids:

- Documentation of drug screenings, consultations, and all other treatment trials;
- Documentation of outcomes and responses, including pain intensity and functional levels; and
- Any modifications to the treatment plan.

The physician must use a form developed by the department, or a substantially equivalent form, to document the patient's improvement in pain intensity and functional levels. This form may be included as part of a sixty-day report.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03021, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03022 How long will the department or self-insurer continue to pay for opioids to treat chronic, noncancer pain? The department or self-insurer will continue to pay for treatment with opioids so long as the physician documents:

- Substantial reduction of the patient’s pain intensity; and
- Continuing substantial improvement in the patient’s function.

Once the worker's condition has reached maximum medical improvement, further treatment with opioids is not payable. Opioid treatment for chronic, noncancer pain past the first three months of such treatment without documentation of substantial improvement is presumed to be not proper and necessary.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03022, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03023 When may the department or self-insurer deny payment of opioid medications used to treat chronic, noncancer pain? Payment for opioid medications may be denied in any of the following circumstances:

- Absent or inadequate documentation;
- Noncompliance with the treatment plan;
- Pain and functional status have not substantially improved after three months of opioid treatment; or
- Evidence of misuse or abuse of the opioid medication or other drugs, or noncompliance with the attending physician’s request for a drug screen.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03023, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03024 Will the department or self-insurer pay for nonopioid medications for the treatment of chronic, noncancer pain? The department or self-insurer may pay for nonopioid medication for the treatment of chronic, noncancer pain when it is proper and necessary.

For example, some drugs such as anti-convulsants, anti-depressants, and others have been demonstrated to be useful in the treatment of chronic pain and may be approved when proper and necessary.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03024, filed 12/7/99, effective 1/20/00.]

WAC 296-20-06101 What reports are health care providers required to submit to the insurer? The department or self-insurer requires different kinds of information at various stages of a claim in order to approve treatment, time loss compensation, and treatment bills. The department or self-insurer may request the following reports at specified points in the claim. The information provided in these reports is needed to adequately manage industrial insurance claims.

<i>Report</i>	<i>Due/Needed by Insurer</i>	<i>What Information Should Be Included In the Report?</i>	<i>Special Notes</i>
Report of Industrial Injury or Occupational Disease (form) Self-Insurance: Physician’s Initial Report (form)	Immediately - within five days of first visit.	See form If additional space is needed, please attach the information to the application. The claim number should be at the top of the page.	Only MD, DO, DC, ND, DPM, DDS, and OD may sign and be paid for completion of this form.
Sixty Day (narrative) Purpose: Support and document the need for continued care when conservative (non-surgical) treatment is to continue beyond sixty days	Every sixty days when only conservative (non-surgical) care has been provided.	(1) The conditions diagnosed , including ICD-9-CM codes and the subjective complaints and objective findings.	Providers may submit legible comprehensive chart notes in lieu of sixty day reports PROVIDED the chart notes include all the information required as noted in the "What Information Should Be Included?" column.

<i>Report</i>	<i>Due/Needed by Insurer</i>	<i>What Information Should Be Included In the Report?</i>	<i>Special Notes</i>
		<p>(2) The relationship of diagnoses, if any, to the industrial injury or exposure.</p> <p>(3) Outline of proposed treatment program, its length, components and expected prognosis including an estimate of when treatment should be concluded and condition(s) stable. An estimated return to work date and the probability, if any, of permanent partial disability resulting from the industrial condition.</p> <p>(4) Current medications, including dosage and amount prescribed. With repeated prescriptions, include the plan and need for continuing medication.</p> <p>(5) If the worker has not returned to work, indicate whether a vocational assessment will be necessary to evaluate the worker's ability to return to work and why.</p> <p>(6) If the worker has not returned to work, a doctor's estimate of physical capacities should be included.</p> <p>(7) Response to any specific questions asked by the insurer or vocational counselor.</p>	<p>However, office notes are not acceptable in lieu of requested narrative reports and providers may not bill for the report if chart notes are submitted in place of the report.</p> <p>Please see WAC 296-20-03021 and 296-20-03022 for documentation requirements for those workers receiving opioids to treat chronic non-cancer pain.</p> <p>Providers must include their name, address and date on all chart notes submitted.</p>
<p>Special Reports/Follow-up Reports (narrative)</p>	<p>As soon as possible following request by the department/insurer.</p>	<p>Response to any specific questions asked by the insurer or vocational counselor.</p>	<p>"Special reports" are payable only when requested by the insurer.</p>

<i>Report</i>	<i>Due/Needed by Insurer</i>	<i>What Information Should Be Included In the Report?</i>	<i>Special Notes</i>
<p>Consultation Examination Reports (narrative)</p> <p>Purpose: Obtain an objective evaluation of the need for ongoing conservative medical management of the worker.</p> <p>The attending doctor may choose the consultant.</p>	<p>At one hundred twenty days if only conservative (nonsurgical) care has been provided.</p>	<p>(1) Detailed history.</p> <p>(2) Comparative history between the history provided by the attending doctor and injured worker.</p> <p>(3) Detailed physical examination.</p> <p>(4) Condition(s) diagnosed including ICD-9-CM codes, subjective complaints and objective findings.</p> <p>(5) Outline of proposed treatment program: Its length, components, expected prognosis including when treatment should be concluded and condition(s) stable.</p> <p>(6) Expected degree of recovery from the industrial condition.</p> <p>(7) Probability of returning to regular work or modified work and an estimated return to work date.</p> <p>(8) Probability, if any, of permanent partial disability resulting from the industrial condition.</p> <p>(9) A doctor's estimate of physical capacities should be included if the worker has not returned to work.</p> <p>(10) Reports of necessary, reasonable x-ray and laboratory studies to establish or confirm diagnosis when indicated.</p>	<p>If the injured/ill worker had been seen by the consulting doctor within the past three years for the same condition, the consultation will be considered a follow-up office visit, not consultation.</p> <p>A copy of the consultation report must be submitted to both the attending doctor and the department/insurer.</p>
<p>Supplemental Medical Report (form)</p>	<p>As soon as possible following request by the department/insurer.</p>	<p>See form</p>	<p>Payable only to the attending doctor upon request of the department/insurer.</p>
<p>Attending Doctor Review of IME Report (form)</p> <p>Purpose: Obtain the attending doctor's opinion about the accuracy of the diagnoses and information provided based on the IME.</p>	<p>As soon as possible following request by the department/insurer.</p>	<p>Agreement or disagreement with IME findings. If you disagree, provide objective/subjective findings to support your opinion.</p>	<p>Payable only to the attending doctor upon request of the department/insurer.</p>

Report	Due/Needed by Insurer	What Information Should Be Included In the Report?	Special Notes
Loss of Earning Power (form) Purpose: Certify the loss of earning power is due to the industrial injury/occupational disease.	As soon as possible after receipt of the form.	See form	Payable only to the AP.
Application to Reopen Claim Due to Worsening of Condition (form) Purpose: Document worsening of the accepted condition and need to reopen claim for additional treatment.	Immediately following identification of worsening after a claim has been closed for sixty days. Crime Victims: Following identification of worsening after a claim has been closed for ninety days.	See form	Only MD, DO, DC, ND, DPM, DDS, and OD may sign and be paid for completion of this form.

What documentation is required for initial and follow-up visits?

Legible copies of office or progress notes are required for the initial and all follow-up visits.

What documentation are ancillary providers required to submit to the insurer?

Ancillary providers are required to submit the following documentation to the department or self-insurer:

Provider	Chart Notes	Reports
Audiology	X	X
Biofeedback	X	X
Dietician		X
Drug & Alcohol Treatment	X	X
Free Standing Surgery	X	X
Free Standing Emergency Room	X	X
Head Injury Program	X	X
Home Health Care		X
Infusion Treatment, Professional Services		X
Hospitals	X	X
Laboratories		X
Licensed Massage Therapy	X	X
Medical Transportation		X
Nurse Case Managers		X
Nursing Home	X	X
Occupational Therapist	X	X
Optometrist	X	X
Pain Clinics	X	X
Panel Examinations		X
Physical Therapist	X	X
Prosthetist/Orthotist	X	X
Radiology		X
Skilled Nursing Facility	X	X
Speech Therapist	X	X

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.060. 00-01-190, § 296-20-06101, filed 12/22/99, effective 1/24/00. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-06101, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-06101, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and

51.16.120(3). 81-24-041 (Order 81-28), § 296-20-06101, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-06101, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-20-06101, filed 11/22/74, effective 1/1/75.]

WAC 296-20-135 Conversion factors. (1) Conversion factors are used to calculate payment levels for services reimbursed under the Washington resource based relative value scale (RBRVS), and for anesthesia services payable with base and time units.

(2) **Washington RBRVS** services have a conversion factor of \$47.12. The fee schedules list the reimbursement levels for these services.

(3) **Anesthesia services** that are paid with base and time units have a conversion factor of \$2.13 per minute. The base units and payment policies can be found in the fee schedules.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 99-10-043, § 296-20-135, filed 4/30/99, effective 7/1/99; 98-09-125, § 296-20-135, filed 4/22/98, effective 7/1/98; 97-10-017, § 296-20-135, filed 4/28/97, effective 7/1/97. Statutory Authority: RCW 51.04.020 and 51.04.030. 96-19-060. §296-20-135, filed 9/16/96, effective 10/17/96; 96-10-086, § 296-20-135, filed 5/1/96, effective 7/1/96; 95-17-001 § 296-20-135, filed 8/2/95, effective 10/1/95; 95-05-072, § 296-20-135, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045 and 94-03-008, § 296-20-135, filed 12/30/93 and 1/6/94, effective 3/1/94; 93-16-072, § 296-20-135, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-02-063, § 296-20-135, filed 12/28/90, effective 1/28/91; 88-24-011 (Order 88-28), § 296-20-135, filed 12/1/88, effective 1/1/89; 87-03-004 (Order 86-45), § 296-20-135, filed 1/8/87; 83-24-016 (Order 83-35), § 296-20-135, filed 11/30/83, effective 1/1/84; 82-24-050 (Order 82-39), § 296-20-135, filed 11/29/82, effective 7/1/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-135, filed 11/30/81, effective 1/1/82; 80-18-033 (Order 80-24), § 296-20-135, filed 12/1/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-135, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-20-135, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-135, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-135, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-135, filed 1/30/74; Order 71-6, § 296-20-135, filed 6/1/71; Order 68-7, § 296-20-135, filed 11/27/68, effective 1/1/69.]

Chapter 296-23 WAC

**RADIOLOGY, RADIATION THERAPY, NUCLEAR
MEDICINE, PATHOLOGY, HOSPITAL,
CHIROPRACTIC, PHYSICAL THERAPY,
DRUGLESS THERAPEUTICS AND NURSING—
DRUGLESS THERAPEUTICS, ETC.**

WAC

296-23-220	Physical therapy rules.
296-23-230	Occupational therapy rules.

WAC 296-23-220 Physical therapy rules. Practitioners should refer to WAC 296-20-010 through 296-20-125 for general information and rules pertaining to the care of workers.

Refer to WAC 296-20-132 and 296-20-135 regarding the use of conversion factors.

All supplies and materials must be billed using HCPCS Level II codes. Refer to chapter 296-21 WAC for additional information. HCPCS codes are listed in the fee schedules.

Refer to chapter 296-20 WAC (WAC 296-20-125) and to the department's billing instructions for additional information.

Physical therapy treatment will be reimbursed only when ordered by the worker's attending doctor and rendered by a licensed physical therapist or a physical therapist assistant serving under the direction of a licensed physical therapist. Doctors rendering physical therapy should refer to WAC 296-21-290.

The department or self-insurer will review the quality and medical necessity of physical therapy services provided to workers. Practitioners should refer to WAC 296-20-01002 for the department's rules regarding medical necessity and to WAC 296-20-024 for the department's rules regarding utilization review and quality assurance.

The department or self-insurer will pay for a maximum of one physical therapy visit per day. When multiple treatments (different billing codes) are performed on one day, the department or self-insurer will pay either the sum of the individual fee maximums, the provider's usual and customary charge, or \$84.00 whichever is less. These limits will not apply to physical therapy that is rendered as part of a physical capacities evaluation, work hardening program, or pain management program, provided a qualified representative of the department or self-insurer has authorized the service.

The department will publish specific billing instructions, utilization review guidelines, and reporting requirements for physical therapists who render care to workers.

Use of diapulse or similar machines on workers is not authorized. See WAC 296-20-03002 for further information.

A physical therapy progress report must be submitted to the attending doctor and the department or the self-insurer following twelve treatment visits or one month, whichever occurs first. Physical therapy treatment beyond initial twelve treatments will be authorized only upon substantiation of improvement in the worker's condition. An outline of the proposed treatment program, the expected restoration goals, and the expected length of treatment will be required.

Physical therapy services rendered in the home and/or places other than the practitioner's usual and customary

office, clinic, or business facilities will be allowed only upon prior authorization by the department or self-insurer.

No inpatient physical therapy treatment will be allowed when such treatment constitutes the only or major treatment received by the worker. See WAC 296-20-030 for further information.

The department may discount maximum fees for treatment performed on a group basis in cases where the treatment provided consists of a nonindividualized course of therapy (e.g., pool therapy; group aerobics; and back classes).

Biofeedback treatment may be rendered on doctor's orders only. The extent of biofeedback treatment is limited to those procedures allowed within the scope of practice of a licensed physical therapist. See chapter 296-21 WAC for rules pertaining to conditions authorized and report requirements.

Billing codes and reimbursement levels are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 99-10-043, § 296-23-220, filed 4/30/99, effective 7/1/99; 98-09-125, § 296-23-220, filed 4/22/98, effective 7/1/98; 97-10-017, § 296-23-220, filed 4/28/97, effective 7/1/97; 96-10-086, § 296-23-220, filed 5/1/96, effective 7/1/96; 95-05-072, § 296-23-220, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045, § 296-23-220, filed 12/30/93, effective 3/1/94; 93-16-072, § 296-23-220, filed 8/1/93, effective 9/1/93.]

WAC 296-23-230 Occupational therapy rules. Practitioners should refer to WAC 296-20-010 through 296-20-125 for general information and rules pertaining to the care of workers.

Refer to WAC 296-20-132 and 296-20-135 for information regarding the conversion factors.

All supplies and materials must be billed using HCPCS Level II codes, refer to the department's billing instructions for additional information.

Occupational therapy treatment will be reimbursed only when ordered by the worker's attending doctor and rendered by a licensed occupational therapist or an occupational therapist assistant serving under the direction of a licensed occupational therapist. Vocational counselors assigned to injured workers by the department or self-insurer may request an occupational therapy evaluation. However, occupational therapy treatment must be ordered by the worker's attending doctor.

An occupational therapy progress report must be submitted to the attending doctor and the department or self-insurer following twelve treatment visits or one month, whichever occurs first. Occupational therapy treatment beyond the initial twelve treatments will be authorized only upon substantiation of improvement in the worker's condition. An outline of the proposed treatment program, the expected restoration goals, and the expected length of treatment will be required.

The department or self-insurer will review the quality and medical necessity of occupational therapy services. Practitioners should refer to WAC 296-20-01002 for the department's definition of medically necessary and to WAC 296-20-024 for the department's rules regarding utilization review and quality assurance.

The department will pay for a maximum of one occupational therapy visit per day. When multiple treatments (differ-

ent billing codes) are performed on one day, the department or self-insurer will pay either the sum of the individual fee maximums, the provider's usual and customary charge, or \$84.00 whichever is less. These limits will not apply to occupational therapy which is rendered as part of a physical capacities evaluation, work hardening program, or pain management program, provided a qualified representative of the department or self-insurer has authorized the service.

The department will publish specific billing instructions, utilization review guidelines, and reporting requirements for occupational therapists who render care to workers.

Occupational therapy services rendered in the worker's home and/or places other than the practitioner's usual and customary office, clinic, or business facility will be allowed only upon prior authorization by the department or self-insurer.

No inpatient occupational therapy treatment will be allowed when such treatment constitutes the only or major treatment received by the worker. See WAC 296-20-030 for further information.

The department may discount maximum fees for treatment performed on a group basis in cases where the treatment provided consists of a nonindividualized course of therapy (e.g., pool therapy; group aerobics; and back classes).

Billing codes, reimbursement levels, and supporting policies for occupational therapy services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 99-10-043, § 296-23-230, filed 4/30/99, effective 7/1/99; 98-09-125, § 296-23-230, filed 4/22/98, effective 7/1/98; 97-10-017, § 296-23-230, filed 4/28/97, effective 7/1/97; 96-10-086, § 296-23-230, filed 5/1/96, effective 7/1/96; 95-05-072, § 296-23-230, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045, § 296-23-230, filed 12/30/93, effective 3/1/94; 93-16-072, § 296-23-230, filed 8/1/93, effective 9/1/93.]

Chapter 296-24 WAC

GENERAL SAFETY AND HEALTH STANDARDS

WAC

296-24-040	Accident prevention programs.
296-24-07501	General requirements.
296-24-12002	Definitions.
296-24-205	Safeguarding power transmission parts.
296-24-20501	What is an employer's duty to protect employees from hazards of power transmission parts?
296-24-20503	What requirements must guards meet?
296-24-20505	What requirements must devices meet?
296-24-20507	What requirements must safeguarding by distance meet?
296-24-20509	What requirements must safeguarding by location meet?
296-24-20511	What other responsibilities beyond safeguarding does an employer have to protect employees from power transmission parts?
296-24-20513	When may a guardrail be used as a safeguard?
296-24-20515	What are the additional requirements for flywheels?
296-24-20517	What are the additional requirements for shafting?
296-24-20519	What are the additional requirements for pulleys?
296-24-20521	What are the additional requirements for belt and rope drives?
296-24-20523	What are the additional requirements for gears?
296-24-20525	What are the additional requirements for belt shifters?
296-24-20527	What are the additional requirements for sewing machines?
296-24-20529	Reserve.
296-24-20531	Reserve.
296-24-20533	Reserve.
296-24-23001	Definition.
296-24-23003	General requirements.
296-24-23005	Designations.

296-24-23007	Designated locations.
296-24-23009	Converted industrial trucks.
296-24-23011	Safety guards.
296-24-23013	Fuel handling and storage.
296-24-23015	Changing and charging storage batteries.
296-24-23017	Lighting for operating areas.
296-24-23019	Control of noxious gases and fumes.
296-24-23021	Dockboards (bridge plates).
296-24-23023	Trucks and railroad cars.
296-24-23025	Operator training.
296-24-23027	Powered industrial truck operations.
296-24-23029	Traveling.
296-24-23031	Loading.
296-24-23033	Operation of the truck.
296-24-23035	Maintenance of industrial trucks.
296-24-23037	Appendix 1 stability of powered industrial trucks non-mandatory appendix.
296-24-23529	Operators.
296-24-47505	Basic rules.
296-24-47507	Cylinder systems.
296-24-47511	Liquefied petroleum gas as a motor fuel.
296-24-47515	Repealed.
296-24-51005	Definitions.
296-24-51009	Basic rules.
296-24-51017	Systems mounted on trucks, semi-trailers, and trailers for transportation of ammonia.
296-24-58503	Scope, application and definitions applicable.
296-24-58505	Fire brigades.
296-24-58513	Protective clothing.
296-24-58515	Respiratory protection devices.
296-24-58516	Procedures for interior structural fire fighting.
296-24-58517	Appendix A—Fire brigades.
296-24-67507	Definitions.
296-24-67515	Personal protective equipment.
296-24-67517	Air supply and air compressors.
296-24-71507	Ventilation in confined spaces.
296-24-71513	Lead.
296-24-71517	Cadmium.
296-24-71519	Mercury.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-24-47515 LP-gas system installations on commercial vehicles. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-47515, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-47515, filed 3/1/76; Order 73-5, § 296-24-47515, filed 5/9/73 and Order 73-4, § 296-24-47515, filed 5/7/73.] Repealed by 99-17-094, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-24-040 Accident prevention programs.

Each employer must develop a formal accident-prevention program, tailored to the needs of the particular plant or operation and to the type of hazards involved. The department may be contacted for assistance in developing appropriate programs.

(1) The minimal program elements for all employers are:

(a) A safety orientation program describing the employer's formal accident prevention program and including the following:

- How and when to report injuries, including instruction as to the location of first-aid facilities.
- How to report unsafe conditions and practices.
- The use and care of required personal protective equipment.
- The proper actions to take in event of emergencies including the routes of exiting from areas during emergencies.
- Identification of the hazardous gases, chemicals or materials involved along with the instructions on the safe use and emergency action following accidental exposure.
- A description of the employer's total safety program.

• An on-the-job review of the practices necessary to perform the initial job assignments in a safe manner.

(b) A designated safety and health committee consisting of management and employee representatives with the

employee representatives being elected or appointed by fellow employees.

(2) Each accident-prevention program must be outlined in writing.

Note: What other written accident prevention program requirements may apply? The accident prevention plan information and/or documentation required by the following chapters can be part of the accident prevention program itself, or they can be covered in supplemental documents.

First-aid requirements	WAC 296-24-061	If an employer chooses Option 1 for first-aid response, the requirements must be in writing in accordance with the standard.
Personal protective equipment	Chapter 296-24 WAC, Part A-2	The employer must provide a written certification that a workplace hazard assessment has been performed.
Safety procedure-control of hazardous energy (lockout/tagout)	Chapter 296-24 WAC, Part A-4	The employer shall establish a written program consisting of an energy control procedure in accordance with the standard.
Hazard communication	Chapter 296-62 WAC, Part C	If workers use or are exposed to chemicals, employers are required to have a written program.
Respiratory protection	Chapter 296-62 WAC, Part E	If the use of a respirator is needed because a hazard exists, a written program is required.
Hearing conservation	Chapter 296-62 WAC, Part K	If employees work in a high noise environment as defined by the standard, the employer must establish a hearing conservation program. Each employer shall maintain a written description of the training program instituted.
Confined space	Chapter 296-62 WAC, Part M	If the employer decides that its employees will enter permit spaces, the employer is required to develop and implement a written permit confined space program.
Biological agents	Chapter 296-62 WAC, Part J	Each employer having employees with occupational exposures as defined by the standard is required to establish a written exposure control plan.
Late night retail	Chapter 296-24 WAC, Part A-3	If a retail employer has employees working between 11:00 p.m. and 6:00 a.m., crime prevention training shall be a part of the accident prevention program.
Means of egress	Chapter 296-24 WAC, Part G-1	If an employer must have an emergency action plan as a requirement of another standard (i.e., process safety management, grain handling, air contaminates) it must be developed and in writing in accordance with the standard.
Welding, cutting and brazing	Chapter 296-24 WAC, Part I	Rules and instructions for the operation and maintenance of oxygen or fuel-gas supply equipment must be readily available in accordance with the standard.
Powered platforms, etc.	Chapter 296-24 WAC, Part J-2	If employees use working platforms, written work procedures for the operation, safe use, and inspection must be provided for training in accordance with the standard.
Carcinogens (cancer causing)	Chapter 296-62 WAC, Part G	If employees are exposed to carcinogens, employers are required to implement a written program to reduce exposure to or below permissible limits.

Air contaminants (specific)	Chapter 296-62 WAC, Part I	If employees are exposed to air contaminants listed in this chapter, employers must establish and implement a written compliance program in accordance with the standard.
Asbestos, tremolite, anthophyllite and actinolite	Chapter 296-62 WAC, Part I-1	If employees are exposed to asbestos, tremolite, anthophyllite and actinolite, employers must establish and implement a written program to reduce employee exposure to or below the permissible limit.
Coke ovens	Chapter 296-62 WAC, Part O	If an employer operates coke ovens, they must implement a written program to reduce employee exposure in accordance with the standard.
Hazardous waste operations	Chapter 296-62 WAC, Part P	If employees are involved in hazardous waste operations, employers must develop and implement a written safety and health program in accordance with the standard.
Hazardous chemicals in laboratories	Chapter 296-62 WAC, Part Q	If employees are exposed to hazardous chemicals in laboratories, employers must develop and carry out the provisions of a written chemical hygiene plan in accordance with this standard.
Safety standards for process safety management of highly hazardous chemicals	Chapter 296-67 WAC	If employees work with toxic, reactive, flammable, or explosive chemicals, employers must develop a written plan as required by the standard.
Telecommunications	Chapter 296-32 WAC	There are additional accident prevention program requirements.
Diving operations	Chapter 296-37 WAC	The employer shall develop and maintain a safe practice manual.
Electrical workers	Chapter 296-45 WAC	There are additional accident prevention program requirements for employees working on or around high voltage.
Ski area facilities and operations	Chapter 296-59 WAC	The employer shall develop a written safety program.
Grain handling facilities	Chapter 296-99 WAC	The employer shall develop and implement a written housekeeping program.
Fire fighters	Chapter 296-305 WAC	The fire department shall develop a risk management policy that can be implemented into the function of incident command and the development on incident strategies.
Agriculture	Chapter 296-307 WAC	Agricultural employees are not covered by chapter 296-24 WAC, but agricultural employers must follow the accident prevention program requirements in WAC 296-307-030, as well as any other applicable standards referenced in this note.

Note:

- In chapter 296-27 WAC and elsewhere, there are recordkeeping requirements of which employers need to be aware.

Certain job specific activities need written, site or activity specific work plans (for example, the fall protection work plan and lead exposure in construction work).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-093, § 296-24-040, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-040, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240 and chapters 42.30 and 43.22 RCW. 78-12-017 (Order 78-22), § 296-24-040, filed 11/13/78; Order 74-27, § 296-24-040, filed 5/7/74; Order 73-5, § 296-24-040, filed 5/9/73 and Order 73-4, § 296-24-040, filed 5/7/73.]

WAC 296-24-07501 General requirements. (1) Application.

(a) Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory protection according to chapter 296-62 WAC, Part E, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(b) Employee owned equipment. Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(c) Design. All personal protective equipment shall be of safe design and construction for the work to be performed. Protectors shall be durable, fit snugly and shall not unduly interfere with the movements of the wearer.

(2) Hazard assessment and equipment selection. This subsection does not apply to WAC 296-24-092, Electrical protective devices, and chapter 296-62 WAC, Part E, Respiratory protection.

(a) The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

(i) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

(ii) Communicate selection decisions to each affected employee; and

(iii) Select PPE that properly fits each affected employee.

Note: Nonmandatory Appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.

(b) The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

(3) Defective and damaged equipment. Defective or damaged personal protective equipment shall not be used.

(4) Training. This subsection does not apply to WAC 296-24-092, Electrical protective devices, and chapter 296-62 WAC, Part E, Respiratory protection.

(a) The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

(i) When PPE is necessary;

(ii) What PPE is necessary;

(iii) How to properly don, doff, adjust, and wear PPE;

(iv) The limitations of the PPE; and

(v) The proper care, maintenance, useful life and disposal of the PPE.

(b) Each affected employee shall demonstrate an understanding of the training specified in (a) of this subsection, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(c) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by (b) of this subsection, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(i) Changes in the workplace render previous training obsolete; or

(ii) Changes in the types of PPE to be used render previous training obsolete; or

(iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(d) The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-07501, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-07501, filed 9/30/94, effective 11/20/94; Order 73-5, § 296-24-07501, filed 5/9/73 and Order 73-4, § 296-24-07501, filed 5/7/73.]

WAC 296-24-12002 Definitions. The following definitions are applicable to all sections of this chapter which include WAC 296-24-120 in the section number.

(1) "Nonwater carriage toilet facility" means a toilet facility not connected to a sewer.

(2) "Number of employees" means, unless otherwise specified, the maximum number of employees present at any one time on a regular shift.

(3) "Personal service room" means a room used for activities not directly connected with the production or service function performed by the establishment. Such activities include but are not limited to, first aid, medical services, dressing, showering, toilet use, washing, and eating.

(4) "Potable water" means water which meets the quality standards for drinking purposes of state or local authority having jurisdiction or water that meets the quality standards prescribed by the United States Environmental Protection Agency's National Interim Primary Drinking Water Regulations, published in 40 CFR Part 141, and 40 CFR 147.2400.

(5) "Toilet facility" means a fixture maintained within a toilet room for the purpose of defecation or urination, or both.

(6) "Toilet room" means a room maintained within or on the premises of any place of employment, containing toilet facilities for use by employees.

(7) "Toxic material" means a material in concentration or amount which exceeds the applicable limit established by a standard, such as chapter 296-62 WAC or, in the absence of an applicable standard, which is of such toxicity so as to constitute a recognized hazard that is causing or is likely to cause death or serious physical harm.

(8) "Urinal" means a toilet facility maintained within a toilet room for the sole purpose of urination.

(9) "Water closet" means a toilet facility maintained within a toilet room for the purpose of both defecation and urination and which is flushed with water.

(10) "Wet process" means any process or operation in a workroom which normally results in surfaces upon which employees may walk or stand becoming wet.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-12002, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-12002, filed 5/20/91, effective 6/20/91; Order 74-27, § 296-24-12002, filed 5/7/74.]

WAC 296-24-205 Safeguarding power transmission parts.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-205, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-205, filed 5/9/73 and Order 73-4, § 296-24-205, filed 5/7/73.]

WAC 296-24-20501 What is an employer's duty to protect employees from hazards of power transmission parts? An employer must protect employees from the hazards of power transmission created by moving objects and parts, including flying objects, falling objects and inherently hazardous surfaces, such as sharp edges, burrs, and protruding nails and bolts.

Specifically, an employer must use enclosure guards, devices, a safe distance, or a safe location to protect employees from the following:

- (1) Belt and rope drives, including pulleys;
- (2) Chain drives;
- (3) Shafts, crankshafts, shaft ends, couplings;
- (4) Gears;
- (5) Flywheels;
- (6) Cams and piston rods;
- (7) Other machine parts that transmit power and expose workers to hazards.

"Power transmission parts" means the mechanical components of a piece of equipment that, together with a source of power (sometimes referred to as a prime mover), provide the motion to a part of a machine or piece of equipment.

Note: Guardrails are not generally accepted as a safeguarding method, but see WAC 296-24-20513 for exceptions when guardrails may be used.

Note: See WAC 296-24-20521(1) for a list of power transmission belts that are exempt from the requirements of this section.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20501, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20501, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-20501, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-20501, filed 5/9/73 and Order 73-4, § 296-24-20501, filed 5/7/73.]

WAC 296-24-20503 What requirements must guards meet? If relying upon a guard, the employer must ensure that it does the following:

- Prevents any part of an employee's body from reaching the hazard by reaching over, under, through, or past the guard;
- Prevents objects from flying toward, or falling onto, an employee;
- Is made of durable material designed to withstand the forces to which it could be exposed;
- Is securely fastened at least every three feet to a fixed part of the machine it safeguards or the building structure; and
- Creates no additional hazards such as from sharp edges or from motion between it and moving parts.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20503, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20503, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-20503, filed 1/11/90, effective 2/26/90; 89-11-035 (Order 89-03),

§ 296-24-20503, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-20503, filed 5/9/73 and Order 73-4, § 296-24-20503, filed 5/7/73.]

WAC 296-24-20505 What requirements must devices meet? To safeguard using a device, an employer must ensure that it:

- Stops motion of the power transmission parts before an employee is exposed to the hazard of coming into contact with a moving part; and
- Prevents the machine from restarting unless an employee manually resets it.

Note: Emergency stop controls or warning signals are not considered devices that, by themselves, effectively safeguard power transmission parts.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20505, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20505, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20505, filed 5/9/73 and Order 73-4, § 296-24-20505, filed 5/7/73.]

WAC 296-24-20507 What requirements must safe-guarding by distance meet? To safeguard by distance, an employer must ensure that:

- The vertical distance between power transmission parts and a floor or walking or working surface is more than seven feet;
- The horizontal distance between power transmission parts and fixed ladders or stairs or other walking or working surface prevents any part of an employee's body from reaching the hazard;
- The power transmission parts are supported so they will not fall on an employee below; and
- No parts or material may fall on an employee below.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20507, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20507, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20507, filed 5/9/73 and Order 73-4, § 296-24-20507, filed 5/7/73.]

WAC 296-24-20509 What requirements must safe-guarding by location meet? To safeguard by location, an employer must ensure that the location of power transmission parts eliminates the possibility that any part of an employee's body can inadvertently reach the hazard.

An employer may safeguard any location used exclusively for power transmission parts by ensuring that the location:

- Is locked;
- Prohibits unauthorized entrance;
- Has a passageway with an effective vertical clearance of at least five feet six inches;
- Is well lit;
- Has a dry, level, firm floor; and
- Has a safe, well-marked route for an authorized employee to follow.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20509, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20509, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20509, filed 5/9/73 and Order 73-4, § 296-24-20509, filed 5/7/73.]

WAC 296-24-20511 What other responsibilities beyond safeguarding does an employer have to protect employees from power transmission parts? (1) An employer must remove, make flush, or guard with metal covers all projections on moving parts, including keys, set-screws, bolts, and nuts.

However, an employer is not required to remove, make flush, or guard keys or setscrews:

- Within an enclosure;
- Below the rim of a pulley that is less than twenty inches in diameter; or
- Where employee contact is not possible.

(a) An employer must fill or cover unused keyways.

(b) An employer must use only cylindrical revolving collars and ensure that screws or bolts used in collars do not project beyond the outside of the collar.

(2) An employer must ensure that power transmission parts are inspected at least once every sixty days for compliance with this standard, and are kept in good working condition at all times. An employer's inspection must ensure that:

- A pulley with a cracked or broken piece is not used.
- All bolts and screws holding power transmission equipment together or supporting the equipment are tight.
- Belts, lacings, and fasteners are in good repair.
- Power transmission parts are kept in proper alignment.

(3) If it is necessary to lubricate power transmission parts while the parts are moving, an employer must ensure that:

(a) The tool an oiler uses, such as an oil can or grease gun, has a long spout to keep the oiler's hands away from the hazard.

(b) An oiler must wear closely fitting clothing.

(c) Drip cups and pans must be securely fastened.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20511, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20511, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-20511, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-20511, filed 5/9/73 and Order 73-4, § 296-24-20511, filed 5/7/73.]

WAC 296-24-20513 When may a guardrail be used as a safeguard? (1) An employer may use a guardrail as a safeguard for:

• A flywheel, when the guardrail is at least fifteen inches from the rim (also see WAC 296-24-20515 for other requirements on flywheels);

• Cranks and connecting rods;

• Tail rods and extension piston rods, when the guardrail is at least fifteen inches from the fully extended end of the rod;

• A horizontal belt in a power generating room;

• A clutch, cutoff coupling, or clutch pulley in an engine room occupied only by an engine room attendant; or

• A runway used only for oiling, maintenance, running adjustment, or repair work.

(2) An employer must ensure that a guardrail used for safeguarding a machine:

(a) Has a toeboard at least four inches high; and

(b) Complies with WAC 296-24-75011.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20513, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20513, filed 5/4/98, 12/2/98 and 6/1/99, effective

1/1/00; Order 73-5, § 296-24-20513, filed 5/9/73 and Order 73-4, § 296-24-20513, filed 5/7/73.]

WAC 296-24-20515 What are the additional requirements for flywheels? (1) Flywheels located so that any part is seven feet or less above the floor or platform must be guarded with an enclosure and must be guarded with a guardrail placed not less than fifteen nor more than twenty inches from the rim. When other safeguarding methods cannot be used, an employer must safeguard a spoked flywheel with a smooth rim five feet or less in diameter by using a disk guard.

(2) The disk must cover the flywheel spokes on the exposed side, and create a smooth surface and edge.

• An open space, a maximum of four inches wide, between the outside edge of the disk and the rim of the wheel may exist to turn the wheel over.

• A key or other uncovered projection must be cut off.

(3) An employer may provide an adjustable guard at the flywheel of a gasoline or diesel engine for starting the engine or for a running adjustment. A slot opening for a jack bar is permitted.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20515, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20515, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20515, filed 5/9/73 and Order 73-4, § 296-24-20515, filed 5/7/73.]

WAC 296-24-20517 What are the additional requirements for shafting? (1) An employer must secure shafting against excessive endwise movement.

(2) An employer must maintain shafting so that it is free from excess oil or grease and pitting from corrosion.

(3) An employer may safeguard shafting under a bench machine by using a guard that extends to:

(a) Within six inches of the underside of the table or the floor; and

(b) At least two inches beyond the shafting.

(4) An employer must ensure that projecting shaft ends:

(a) Have a smooth edge and end and project no more than one-half the diameter of the shaft; or

(b) Are guarded by a nonrotating cap or safety sleeve.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20517, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20517, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20517, filed 5/9/73 and Order 73-4, § 296-24-20517, filed 5/7/73.]

WAC 296-24-20519 What are the additional requirements for pulleys? (1) An employer must ensure that a pulley is designed and balanced for the speed at which it operates.

(2) An employer may not use a composition or wood pulley where it is likely to deteriorate in the workplace.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20519, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20519, filed 5/9/73 and Order 73-4, § 296-24-20519, filed 5/7/73.]

WAC 296-24-20521 What are the additional requirements for belt and rope drives? (1) An employer is

not required to safeguard belts operating at two hundred fifty linear feet per minute or less that are:

- Flat and one inch wide or less; or
- Flat and between one to two inches wide with no metal lacings or fasteners; or
- Round and one-half inch or less in diameter; or
- Single strand v-belts thirteen thirty-seconds inch wide or less.

(2) An employer may use a nip point and pulley guard on a vertical or inclined belt that:

- Is two and one-half inches wide or less;
- Is running at a speed of less than one thousand feet per minute; and
- Is free from metal lacings or fastenings.

"Nip-point belt and pulley guard" means a device that encloses the pulley and has rounded or rolled edge slots for the belt to pass through.

(3) When the space between the upper and lower runs of a horizontal belt would allow an employee to pass between them, an employer must:

- Guard along the upper run; or
- Provide a platform over the lower run and a railing over the lower run that will prevent employees from leaving the platform.

In a power generating room, only the lower run of a horizontal belt must be guarded.

(4) The employer must use an idler when using quarter-twist belts that can run in either direction.

(5) On those belt and rope drives that require dressing, the employer must apply the dressing to a moving belt or rope where the belt or rope leaves the pulley.

(6) An employer must guard an overhead belt located more than seven feet above the floor or working surface when:

- The belt is located over a passageway or work space and travels at a speed of one thousand eight hundred feet or more per minute; or
- The distance between the centers of its pulleys is ten feet or more; or
- The belt is wider than eight inches.

(7) An employer must ensure that a belt shifted by hand is not fastened with metal or other material that creates a hazard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20521, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20521, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20521, filed 5/9/73 and Order 73-4, § 296-24-20521, filed 5/7/73.]

WAC 296-24-20523 What are the additional requirements for gears? An employer is not required to safeguard hand-operated gears used only to adjust machine parts that do not continue to move when not being turned by hand.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20523, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20523, filed 5/9/73 and Order 73-4, § 296-24-20523, filed 5/7/73.]

WAC 296-24-20525 What are the additional requirements for belt shifters? (1) An employer must ensure that the equipment listed below, if installed after August 17, 1971, has a permanent, mechanical belt shifter:

- Tight and loose (drive and idler) pulleys; and
- A cone pulley belt.

(2) An employer must ensure that a belt shifter or clutch handle:

- (a) Safeguards the nip point;
- (b) Is rounded;
- (c) Is within easy reach, but minimizes the chance of accidental contact with the operator; and
- (d) Is located over a machine or bench, or has handles cut off six feet six inches above the floor level.

(3) No belt shifter is required if:

- The belt is endless or laces with rawhide; and
- The nip point of the belt and pulley is safeguarded by a nip point guard in front of the cone; and
- The guard extends at least to the top of the largest step of the cone and is formed to show the contour of the cone.

(4) An employer must ensure that each belt shifter and clutch handle of the same type in a workplace moves in the same direction to stop a machine, i.e., either all right or all left.

(a) A friction clutch handle on a countershaft carrying two clutch pulleys with open and crossed belts is not required to move in the same direction; and

(b) The clutch handle must have three positions with the machine at rest when the clutch handle is in the center position.

(5) An employer must ensure that a belt tightener used to activate machinery:

- (a) Is substantially constructed and securely fastened;
- (b) Has bearings securely capped;
- (c) Has a mechanism to prevent it from falling; and
- (d) Is securely held in the "off" position by gravity, or by an automatic mechanism that must be released by hand.

(6) An employer may not use a belt pole to shift a belt on and off a fixed pulley. When a belt shifter cannot be used, an employer may use a belt pole that is:

- (a) Smooth; and
- (b) Large enough for an employee to grasp securely.

Note: A belt pole is also known as a "belt shipper" or "shipper pole."

(7) An employer must use a substantial belt perch, such as a bracket, roller, etc., to safely shift an idle belt away from a shaft when a loose pulley or idler is not practical.

(8) An employer must ensure that a bearing support immediately adjacent to a friction clutch or cutoff coupling has self-lubricating bearings requiring infrequent attention.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20525, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20525, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-20525, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-20525, filed 3/1/76; Order 73-5, § 296-24-20525, filed 5/9/73 and Order 73-4, § 296-24-20525, filed 5/7/73.]

WAC 296-24-20527 What are the additional requirements for sewing machines? No guard is required for belt drives on a light or medium duty sewing machine if:

- It uses either a flat or a round belt without metal lacings and fasteners;
- The belt is located above the table top;
- The machine is not used to sew heavy materials such as leather, canvas, denim, or vinyl;
- The operators' hands are not in, near, or on the wheel, nip point, or belt area when the machine is operating;
- The distance between the area where the operator is holding and feeding material with both hands and the belt or wheel location is great enough that the operator is not exposed to a motion hazard; and
- The table top is designed so that employees near the machine are not exposed to motion hazards while they work or as they pass by.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20527, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20527, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20527, filed 5/9/73 and Order 73-4, § 296-24-20527, filed 5/7/73.]

WAC 296-24-20529 Reserve.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20529, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20529, filed 5/9/73 and Order 73-4, § 296-24-20529, filed 5/7/73.]

WAC 296-24-20531 Reserve.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20531, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 76-6, § 296-24-20531, filed 3/1/76; Order 73-5, § 296-24-20531, filed 5/9/73 and Order 73-4, § 296-24-20531, filed 5/7/73.]

WAC 296-24-20533 Reserve.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20533, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-20533, filed 11/13/80; Order 73-5, § 296-24-20533, filed 5/9/73 and Order 73-4, § 296-24-20533, filed 5/7/73.]

WAC 296-24-23001 Definition. These definitions are applicable to all sections of this chapter containing WAC 296-24-230 in the section number. The terms, "approved truck" or "approved industrial truck" as used in this section, mean a truck that is listed or approved for fire safety purposes for the intended use by a nationally recognized testing laboratory, using nationally recognized testing standards. Refer to WAC 296-24-58501(19) for definition of listed, and to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23001, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-23001, filed 11/14/88; Order 74-27, § 296-24-23001, filed 5/7/74; Order 73-5, § 296-24-23001, filed 5/9/73 and Order 73-4, § 296-24-23001, filed 5/7/73.]

WAC 296-24-23003 General requirements. These requirements are applicable to all sections of this chapter containing the WAC 296-24-230 in the section number.

(1) This section contains safety requirements relating to fire protection design, maintenance, and use of:

- Fork trucks,
- Forklifts,
- Tractors,
- Platform lift trucks,
- Motorized hand trucks, and
- Other specialized industrial trucks, powered by electric motors or internal combustion engines. This section does not apply to:
 - Compressed air or nonflammable compressed gas-operated industrial trucks,
 - Farm vehicles,
 - Vehicles intended primarily for earth moving or over-the-road hauling.

(2) All powered industrial trucks in use by an employer must meet the applicable requirements of design, construction and stability as defined by the "American National Standards Institute B56.1-1969, Safety Standards for Powered Industrial Trucks," except for vehicles intended primarily for earth moving or over-the-road hauling. All new powered industrial trucks acquired and used by an employer on or after March 1, 2000, must meet the applicable requirements of design, construction and stability as defined in ASME B56.1-1993. The employer must ensure that all powered industrial trucks are inspected, maintained and operated in accordance with this section and the manufacturer's recommendations and specifics.

(3) Approved trucks must bear a label or some other identifying mark indicating approval by the testing laboratory as meeting the specifications and requirements of ANSI B56.1-1969.

(4) Modifications and additions which affect capacity and safe operation must not be performed without manufacturer's prior written approval. When the manufacturer has granted modification, the capacity, operation and maintenance instruction plates, tags or decals must be changed accordingly.

(5) If the truck is equipped with front-end attachment(s), including fork extensions, the employer must ensure the truck is marked to identify the attachment(s), show the approximate weight of the truck and attachment combination, and show the maximum capacity of the truck with attachment(s) at the maximum elevation with load laterally centered.

(6) The employer must see that all nameplates and markings are in place and are maintained in a legible condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23003, filed 12/21/99, effective 3/1/00; Order 76-6, § 296-24-23003, filed 3/1/76; Order 74-27, § 296-24-23003, filed 5/7/74; Order 73-5 § 296-24-23003, filed 5/9/73 and Order 73-4, § 296-24-23003, filed 5/7/73.]

WAC 296-24-23005 Designations. The atmosphere or location must have been classified, as to whether it is hazardous or nonhazardous, prior to determining which industrial truck is appropriate for use. Eleven designations of powered industrial trucks (forklifts) or tractors are included in this standard. Definitions of the eleven separate designations are:

- D refers to trucks that are diesel engine powered that have minimum safeguards against inherent fire hazards.
- DS refers to diesel powered trucks that, in addition to meeting all the requirements for type D trucks, are provided

with additional safeguards to the exhaust, fuel and electrical systems.

- DY refers to diesel powered trucks that have all the safeguards of the DS trucks and, in addition, any electrical equipment is completely enclosed. They are equipped with temperature limitation features.

- E refers to electrically powered trucks that have minimum acceptable safeguards against inherent fire hazards.

- ES refers to electrically powered trucks that, in addition to all of the requirements for the E trucks, have additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures.

- EE refers to electrically powered trucks that have, in addition to all of the requirements for the E and ES type trucks, have their electric motors and all other electrical equipment completely enclosed.

- EX refers to electrically powered trucks that differ from E, ES, or EE type trucks in that the electrical fittings and equipment are designed, constructed and assembled to be used in atmospheres containing flammable vapors or dusts.

- G refers to gasoline powered trucks that have minimum acceptable safeguards against inherent fire hazards.

- GS refers to gasoline powered trucks that are provided with additional exhaust, fuel, and electrical systems safeguards.

- LP refers to liquified petroleum gas-powered trucks that, in addition to meeting all the requirements for type G trucks, have minimum acceptable safeguards against inherent fire hazards.

- LPS refers to liquefied petroleum gas powered trucks that in addition to meeting the requirements for LP type trucks, have additional exhaust, fuel, and electrical systems safeguards.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23005, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23005, filed 5/9/73 and Order 73-4, § 296-24-23005, filed 5/7/73.]

WAC 296-24-23007 Designated locations. (1) The powered industrial trucks specified under (2) of this section are the minimum types required. Powered industrial trucks having greater safeguards may be used if desired.

(2) Tables N-1.1 and N-1.2, following this section, give specific vehicle usage information by group and class. References are to the corresponding classification as used in chapter 296-24 WAC, Part L.

(a) Powered industrial trucks must not be used in the following atmospheres containing hazardous concentration of:

- Acetylene,
- Butadiene,
- Ethylene oxide,
- Hydrogen (or gases or vapors equivalent in hazard to hydrogen, such as manufactured gas),
- Propylene oxide,
- Acetaldehyde,
- Cyclopropane,
- Diethyl ether,
- Ethylene,
- Isoprene, or
- Unsymmetrical dimethyl hydrazine (UDMH).

(i) Powered industrial trucks must not be used in atmospheres containing hazardous concentrations of metal dust, including:

- Aluminum, magnesium, and their commercial alloys,
- Other metals of similarly hazardous characteristics, or
- In atmospheres containing:
 - Carbon black,
 - Coal or coke dust except approved powered industrial trucks designated as EX, or other trucks approved by the manufacturer, may be used in such atmospheres.

(ii) In atmospheres where dust of magnesium, aluminum or aluminum bronze may be present, fuses, switches, motor controllers, and circuit breakers of trucks must have enclosures specifically approved for such locations.

(b) Only approved powered industrial trucks designated as EX, or other trucks approved by the manufacturer, may be used in atmospheres containing:

- Acetone,
- Acrylonitrile,
- Alcohol,
- Ammonia,
- Benzene,
- Bensol,
- Butane,
- Ethylene dichloride,
- Gasoline,
- Hexane,
- Lacquer solvent vapors,
- Naphtha,
- Natural gas,
- Propane,
- Propylene,
- Styrene,
- Vinyl acetate,
- Vinyl chloride, or
- Xylenes in quantities sufficient to produce explosive or ignitable mixtures and where such concentrations of these gases or vapors exist continuously, intermittently or periodically under normal operating conditions or may exist frequently because of repair, maintenance operations, leakage, breakdown or faulty operation of equipment.

(c) Powered industrial trucks designated as DY, EE, or EX, or other trucks approved by the manufacturer, may be used in locations where volatile flammable liquids or flammable gases are handled, processed or used, but in which the hazardous liquids, vapors or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in the case of abnormal operation of equipment; also in locations in which ignitable concentrations of gases or vapors are normally prevented by positive mechanical ventilation but which might become hazardous through failure or abnormal operation of the ventilating equipment; or in locations which are adjacent to Class I, Division 1 locations, and to which ignitable concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clear air, and effective safeguards against ventilation failure are provided.

(d) In locations used for the storage of hazardous liquids in sealed containers or liquefied or compressed gases in containers, only approved powered industrial trucks with the following designations, or other trucks approved by the manufacturer, can be used:

- DS,
- ES,
- GS, or

• LPS. This classification includes locations where volatile flammable liquids or flammable gases or vapors are used, but which, would become hazardous only in case of an accident or of some unusual operation condition. The quantity of hazardous material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved, and the record of the industry or business with respect to explosions or fires are all factors that should receive consideration in determining whether or not the DS, DY, ES, EE, GS, or LPS designated truck, or other trucks approved by the manufacturer, possesses sufficient safeguards for the location. Piping without valves, checks, meters and similar devices would not ordinarily be deemed to introduce a hazardous condition even though used for hazardous liquids or gases. Locations used for the storage of hazardous liquids or of liquefied or compressed gases in sealed containers would not normally be considered hazardous unless subject to other hazardous conditions also.

(i) Employers must use only approved powered industrial trucks, or other trucks approved by the manufacturer, designated as EX in atmospheres in which combustible dust is or may be in suspension continuously, intermittently, or periodically under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures, or where mechanical failure or abnormal operation of machinery or equipment might cause such mixtures to be produced.

(ii) The following areas are usually included in the EX, or other trucks approved by the manufacturer, classification:

- In working areas of grain handling and storage plants:
- Room containing the following:
 - Grinders or pulverizers,
 - Cleaners,
 - Graders,
 - Scalpers,
 - Open conveyors or spouts,
 - Open bins or hoppers,
 - Mixers, or blenders,
 - Automatic or hopper scales,
 - Packing machinery,
 - Elevator heads and boots,
 - Stock distributors,
 - Dust and stock collectors (except all-metal collectors vented to the outside), and

• All similar dust producing machinery and equipment in:

- Grain processing plants,
- Starch plants,
- Sugar pulverizing plants,
- Malting plants,
- Hay grinding plants, and
- Other occupancies of similar nature;

- Coal pulverizing plants (except where the pulverizing equipment is essentially dust tight);

- All working areas where metal dusts and powders are produced, processed, handled, packed, or stored (except in tight containers); and

- Other similar locations where combustible dust may, under normal operating conditions, be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

(e) Employers must use only approved powered industrial trucks designated as DY, EE, or EX, or other trucks approved by the manufacturer, in atmospheres in which combustible dust will not normally be in suspension in the air or will not be likely to be thrown into suspension by the normal operation of equipment or apparatus in quantities sufficient to produce explosive or ignitable mixtures but where deposits or accumulations of such dust may be ignited by arcs or sparks originating in the truck.

(f) Employers must use only approved powered industrial trucks designated as DY, EE, or EX, or other trucks approved by the manufacturer, in locations which are hazardous because of the presence of easily ignitable fibers or flyings but in which such fibers or flyings that are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures.

(g) Employers must use only approved powered industrial trucks designated as DS, DY, ES, EE, EX, GS, or LPS, or other trucks approved by the manufacturer, in locations where easily ignitable fibers are stored or handled including outside storage, but are not being processed or manufactured. Industrial trucks designated as E, which have been previously used in these locations may continue to be used.

(h) On piers and wharves handling general cargo, only approved powered industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types, and are approved by the manufacturer, may be used.

(i) If storage warehouses and outside storage locations are hazardous, employers must use only the approved powered industrial truck specified for such locations in WAC 296-24-23007. Powered industrial trucks designated D, E, G or LP, or trucks that conform to the requirements of these types, and are approved by the manufacturer, may be used if not classified as hazardous.

(j) If general industrial or commercial properties are hazardous, only approved power-operated industrial trucks specified for such locations in this WAC 296-24-23007 shall be used. If not classified as hazardous, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements of these types, and are approved by the manufacturer, may be used.

TABLE W-1
SUMMARY TABLE ON USE OF INDUSTRIAL TRUCKS IN VARIOUS LOCATIONS

CLASSES (Descriptions of classes)	GROUPS (Examples of locations or atmosphere in classes and groups)				DIVISIONS (Nature of hazardous conditions)	
UNCLASSIFIED	No group designations in Unclassified				No divisions in Unclassified	
Locations not possessing atmospheres as described in other columns.	Piers and wharves inside and outside general storage, general industrial or commercial properties					
CLASS I LOCATIONS	A	B	C	D	1	2
Locations in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures.	Acetylene	Hydrogen	Ethyl ether	Gasoline Naphtha Alcohols Acetone Lacquer solvent Benzene	Conditions exists continuously, intermittently, or periodically under normal operating conditions.	Condition may occur due to accidentally, for example, due to a puncture of a storage drum.
CLASS II LOCATIONS	E		F		G	
Locations which are hazardous because of the presence of combustible dust.	Metal dust		Carbon black Coal dust Coke dust		Grain dust Flour dust Starch dust Organic dust	
	Explosive mixture may be present under normal operating conditions, or where failure of equipment may cause the condition to exist simultaneously with arcing or sparking of electrical equipment, or where dusts of an electrically conducting nature may be present.				Explosive mixture not normally present, but where deposits of dust may cause heat rise in electrical equipment, or where such deposits may be ignited by arcs or sparks from electrical equipment.	
CLASS III LOCATIONS	Class III has no groups				1	2
Locations where easily ignitable fibers or flyings are present but not likely to be in suspension in quantities sufficient to produce ignitable mixtures.	Baled waste, cocoa fiber, cotton, excelsior, hemp, istle, jute, kapok, oakum, sisal, Spanish moss, synthetic fibers, tow.				Locations in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Locations in which easily ignitable fibers are stored or handled (except in the process of manufacture).

TABLE W-2
AUTHORIZED USES OF TRUCKS BY TYPES IN GROUPS OF CLASSES AND DIVISIONS

Groups in classes	UN CLASSIFIED	CLASS I								CLASS II						CLASS III	
		DIV I				DIV II				DIV I			DIV II			DIV I	DIV II
		A	B	C	D	A	B	C	D	E	F	G	E	F	G	None	None
Diesel:	None																
Type D	D** ..																
Type DS																DS...	DS
Type DY																DY...	DY
Electric:																	
Type E	E** ..																
Type ES																ES.....	E
Type EE																EE.....	EE
Type EX				EX...							EX...	EX...				EX.....	EX
Gasoline:																	
Type G	G** ..																
Type GS																GS	GS
LP-Gas:																	
Type LP	LP** ..																
Type LPS																LPS ..	LPS

**Trucks conforming to these types may also be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23007, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-23007, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-23007, filed 5/9/73 and Order 73-4, § 296-24-23007, filed 5/7/73.]

WAC 296-24-23009 Converted industrial trucks.

Powered industrial trucks that were originally approved for the use of gasoline for fuel, when converted to the use of liquefied petroleum gas fuel in accordance with WAC 296-24-23035, may be used in locations where G, GS, LP, or LPS designated trucks have been specified.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23009, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23009, filed 5/9/73 and Order 73-4, § 296-24-23009, filed 5/7/73.]

WAC 296-24-23011 Safety guards. (1) High lift rider trucks must be fitted with an overhead guard manufactured in accordance with WAC 296-24-23003(2), unless operating conditions do not permit.

(2) If the type of load presents a hazard, the user must equip powered industrial trucks (forklifts) with a vertical load backrest extension manufactured in accordance with WAC 296-24-23003(2).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23011, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23011, filed 5/9/73 and Order 73-4, § 296-24-23011, filed 5/7/73.]

WAC 296-24-23013 Fuel handling and storage. (1) Liquid fuels, such as gasoline and diesel fuel must be handled and stored in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30-1996).

(2) Liquefied petroleum gas fuel must be handled and stored in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58-1998).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23013, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23013, filed 5/9/73 and Order 73-4, § 296-24-23013, filed 5/7/73.]

WAC 296-24-23015 Changing and charging storage batteries. (1) Battery charging installations must be located in areas designated for that purpose.

(2) Battery charging activities must be provided with a means for each of the following:

- Flushing and neutralizing spilled electrolyte,
- Fire protection, protection of charging apparatus from damage by trucks, and
- Adequate ventilation for dispersal of fumes from gas-ing batteries.

(3) When racks are used for support of batteries, they should be made of materials nonconductive to spark generation or be coated or covered to achieve this objective.

(4) A conveyor, overhead hoist, or equivalent material handling equipment must be provided for handling batteries.

(5) Reinstalled batteries must be properly positioned and secured in the truck.

(6) A carboy tiler or siphon must be provided for handling electrolyte to minimize potential for spillage.

(7) When charging batteries, acid must be poured into water; water must not be poured into acid.

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(8) Trucks must be properly positioned and brake applied before attempting to change or charge batteries.

(9) When charging batteries, the vent caps should be kept in place to avoid electrolyte spray and care must be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) must be open to dissipate heat.

(10) Smoking must be prohibited in the charging area.

(11) Precautions must be taken to prevent open flames, sparks, or electric arcs in battery charging areas.

(12) Tools and other metallic objects must be kept away from the top of uncovered batteries.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23015, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23015, filed 5/9/73 and Order 73-4, § 296-24-23015, filed 5/7/73.]

WAC 296-24-23017 Lighting for operating areas.

(1) Controlled lighting of adequate intensity should be provided in operating areas. (See American National Standard Practice for Industrial Lighting, ANSI/IS UP-7-1990.)

(2) Where general lighting is less than 2 lumen per square foot, auxiliary directional lighting must be provided on the truck.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23017, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23017, filed 5/9/73 and Order 73-4, § 296-24-23017, filed 5/7/73.]

WAC 296-24-23019 Control of noxious gases and fumes. Concentration levels of carbon monoxide gas created by powered industrial truck operations must not exceed the levels specified in WAC 296-62-075, Part L (general operational health standards). Questions concerning degree of concentration and methods of sampling to ascertain the conditions should be referred to a competent industrial hygienist or other technically qualified person.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23019, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23019, filed 5/9/73 and Order 73-4, § 296-24-23019, filed 5/7/73.]

WAC 296-24-23021 Dockboards (bridge plates). (1) Portable and powered dockboards must be strong enough to carry the load imposed on them.

(2) Portable dockboards must be secured in position, either by being anchored or equipped with devices which will prevent their slipping.

(3) Powered dockboards must be designed and constructed in accordance with Commercial Standard CS202-56 (1956) "Industrial Lifts and Hinged Loading Ramps" published by the U.S. Department of Commerce.

(4) Handholds, or other effective means, must be provided on portable dockboards to permit safe handling.

(5) Positive protection must be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23021, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23021, filed 5/9/73 and Order 73-4, § 296-24-23021, filed 5/7/73.]

WAC 296-24-23023 Trucks and railroad cars. (1) The brakes of highway trucks must be set and wheel chocks

placed under the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks.

(2) Wheel stops or other recognized positive protection must be provided to prevent railroad cars from moving during loading or unloading operations.

(3) Fixed jacks may be necessary to support a semitrailer and prevent up-ending during the loading or unloading when the trailer is not coupled to a tractor.

(4) Positive protection must be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

(5) Trucks/trailers equipped with a rear-end protection device (to prevent cars from being wedged underneath the rear end during a collision) may use a mechanical means to secure it to the loading dock. Wheel chocks are not required when:

(a) A positive mechanical means to secure trucks or trailers is permitted if it prevents movement away from the dock during loading, unloading, and boarding by hand trucks or powered industrial trucks.

(b) All installed mechanical equipment must be maintained and used as recommended by the manufacturer.

(c) Damaged mechanical equipment must be removed from service immediately.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23023, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-23023, filed 1/10/91, effective 2/12/91; Order 73-5, § 296-24-23023, filed 5/9/73 and Order 73-4, § 296-24-23023, filed 5/7/73.]

WAC 296-24-23025 Operator training. (1) Safe operation.

(a) The employer must ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this section.

(b) Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer must ensure that each operator has successfully completed the training required by this section.

(2) Training program implementation.

(a) Trainees may operate a powered industrial truck only:

(i) Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and

(ii) Where such operation does not endanger the trainee or other employees.

Note: The employer, or any other qualified person of the employer's choosing, may give required training and evaluation.

(b) Training must consist of a combination of:

- Formalized instruction (which may include lecture, discussion, interactive computer learning, video tape and/or written material);

- Practical training (demonstrations performed by the trainer and practical exercises performed by the trainee); and

- Evaluation of the operator's performance in the workplace.

(c) All operator training and evaluation must be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

(3) **Training program content.** Powered industrial truck operators must receive initial training in the topics that follow, except in topics that the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace.

(a) Truck-related topics:

- Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;

- Differences between the truck and the automobile;

- Truck controls and instrumentation: Where they are located, what they do, and how they work;

- Engine or motor operation;

- Steering and maneuvering;

- Visibility (including restrictions due to loading);

- Fork and attachment adaptation, operation, and use limitations;

- Vehicle capacity;

- Vehicle stability;

- Any vehicle inspection and maintenance that the operator will be required to perform;

- Refueling and/or charging and recharging of batteries;

- Operating limitations;

- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

(b) Workplace-related topics:

- Surface conditions where the vehicle will be operated;

- Composition of loads to be carried and load stability;

- Load manipulation, stacking, and unshackling;

- Pedestrian traffic in areas where the vehicle will be operated;

- Narrow aisles and other restricted places where the vehicle will be operated;

- Hazardous (classified) locations where the vehicle will be operated;

- Ramps and other sloped surfaces that could affect the vehicle's stability;

- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;

- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

(4) Refresher training and evaluation.

(a) Refresher training, including an evaluation of the effectiveness of that training, must be conducted as required by subsection (2)(b) of this section, to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.

(b) Refresher training in relevant topics must be provided to the operator when:

- The operator has been observed to operate the vehicle in an unsafe manner;

- The operator has been involved in an accident or near-miss incident;

- The operator has received an evaluation that reveals that the operator is not operating the truck safely;

- The operator is assigned to drive a different type of truck; or

- A condition in the workplace changes in a manner that could affect safe operation of the truck.

(c) An evaluation of each powered industrial truck operator's performance must be conducted at least once every three years.

(5) **Avoidance of duplicative training.** If an operator has previously received training in a topic specified in subsection (3) of this section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely, within three years.

(6) **Recordkeeping.** Employers must keep records showing that each operator has been trained and evaluated as required by this section. These records must include the name of the operator, the date of the training, the date(s) of the evaluation, and the name of the person(s) giving the training or evaluation.

(7) **Implementation dates.** The employer must ensure that operators of powered industrial trucks are trained, as appropriate, by the effective date of this section. Employees hired on or after the effective date of this section must be trained and evaluated prior to being assigned to operate a powered industrial truck.

(8) **Nonmandatory guidance.** To assist employers in implementing operator training requirements, a nonmandatory appendix has been added as WAC 296-24-23037. This appendix does not add to, alter, or reduce the requirements of this section.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23025, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23025, filed 5/9/73 and Order 73-4, § 296-24-23025, filed 5/7/73.]

WAC 296-24-23027 Powered industrial truck operations. (1) Powered industrial trucks must not be driven up to anyone in front of a bench or other fixed object.

(2) Employers must not allow people under the elevated portion of any powered industrial truck, whether loaded or empty.

(3) Employers must not allow people to ride on powered industrial trucks unless a safe place to ride is provided.

(4) The employer must prohibit any body part from being placed between the uprights of the mast or outside the running lines of the truck.

(5) When leaving a powered industrial truck unattended, load engaging means must be fully lowered, controls must be neutralized, power must be shut off, and brakes set. Wheels blocked if the truck is parked on an incline.

(a) A powered industrial truck is unattended when the operator is 25 feet or more away from the vehicle, which remains in view, or whenever the operator leaves the vehicle and it is not in view.

(b) When the operator of a powered industrial truck is dismantled and within 25 feet of the truck, still in view, the load engaging means must be fully lowered, controls neutralized, and the brakes set to prevent movement.

(6) A safe distance must be maintained from the edge of ramps, platforms while on any elevated dock, or platform or

freight car. Powered industrial trucks must not be used for opening or closing freight car doors unless the truck is using an approved device specifically designed to open and close doors.

(a) The design of the door opening or closing device must require the force applied by the device to the door to be in a direction parallel with the door travel.

(b) The powered industrial truck operator must be trained in the use of the door opening or closing device and keep the operation in full view while opening or closing.

(c) People must stand clear while the door is being moved with a device.

(7) Brakes must be set and wheel blocks must be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars must be checked for breaks and weakness before they are driven onto. Mechanical means may be utilized to secure trucks/trailers to loading docks in lieu of wheel chocks to prevent movement (reference WAC 296-24-23023).

(8) There must be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.

(9) An overhead guard must be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

(10) A load backrest extension must be used to prevent any part of the load from falling rearward.

(11) Employers must use only approved powered industrial trucks in hazardous locations.

(12) Whenever a truck is equipped with vertical only, or vertical and horizontal controls that can be elevated with the lifting carriage or forks for lifting personnel, the following additional precautions must be taken:

(a) A safety platform secured to the lifting carriage and/or forks must be used.

(b) A means must be provided for people on the platform to shut the power off to the truck.

(c) Protection from falling objects as necessary by the operating conditions must be provided.

(13) When using powered industrial trucks (forklifts) as elevated work platforms a platform or structure built specifically for hoisting persons may be used if the following requirements are complied with:

(a) The structure must be securely attached to the forks and must have standard guardrails and toeboards installed on all sides.

(b) The hydraulic system must be so designed that the lift mechanism will not drop faster than 135 feet per minute in the event of a failure in any part of the system. Forklifts used for elevating work platforms must be identified as being designed for that purpose.

(c) A safety strap must be installed or the control lever must be locked to prevent the boom from tilting.

(d) An operator must attend the lift equipment while workers are on the platform.

(e) The operator must be in the normal operating position while raising or lowering the platform.

(f) Except when inching or maneuvering the powered industrial truck at a very slow speed, the vehicle must not be moved from point to point while workers are on the platform.

(g) The area between workers on the platform and the mast must be guarded to prevent contact with chains or other shear points.

(14) Access to fire aisles, stairways, and fire equipment must be kept clear.

(15) An active operator protection restraint device (such as a seatbelt or lap-bar) or system must be used, when provided.

(16) Powered industrial trucks used as order pickers (see Figure 1), that do not have standard guardrails on all open sides, must be equipped with a safety harness, lanyard, and a tie-off point approved by the manufacturer. Fall protection equipment must meet the criteria outlined in WAC 296-24-87035, Appendix C - personal fall arrest systems.

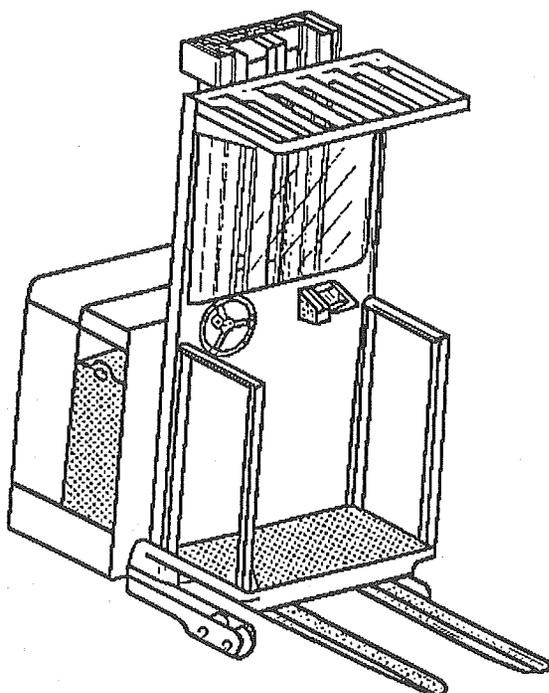


Figure - 1

High Lift Order Picker Rider Truck

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23027, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-23027, filed 1/10/91, effective 2/12/91; Order 74-27, § 296-24-23027, filed 5/7/74; Order 73-5, § 296-24-23027, filed 5/9/73 and Order 73-4, § 296-24-23027, filed 5/7/73.]

WAC 296-24-23029 Traveling. (1) All traffic regulations must be observed, including authorized plant speed limits. A distance of approximately three truck lengths from the truck ahead must be maintained. The powered industrial truck must be kept under control at all times.

(2) The right of way must be yielded to ambulances, fire trucks, or other vehicles in emergency situations.

(3) Employers must not allow other powered industrial trucks traveling in the same direction to be passed at intersections, blind spots, or other dangerous locations.

(4) The driver must slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver must travel with the load trailing.

(5) Railroad tracks must be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.

(6) The driver must look in the direction of, and keep a clear view of the path of travel.

(7) Grades must be ascended or descended slowly.

(a) When ascending or descending grades in excess of 10 percent, loaded powered industrial trucks must be driven with the load upgrade.

(b) Unloaded powered industrial trucks should be operated on all grades with the load engaging means downgrade.

(c) On all grades the load and load engaging means must be tilted back if applicable, and raised only as far as necessary to clear the road surface.

(8) Powered industrial trucks must be operated at a speed that will permit it to be brought to a stop in a safe manner.

(9) Employers must not permit stunt driving and horse-play.

(10) The driver must slow down on wet and/or slippery floors.

(11) Dockboard or bridge plates, must be properly secured before they are driven over. Dockboard or bridge plates must be driven over carefully and slowly and their rated capacity never exceeded.

(12) Elevators must be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.

(13) Motorized hand trucks must enter elevator or other confined areas with load end forward.

(14) Powered industrial truck operators must avoid driving over loose objects on the roadway surface.

(15) While negotiating turns, speed must be reduced to a safe level.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23029, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23029, filed 5/9/73 and Order 73-4, § 296-24-23029, filed 5/7/73.]

WAC 296-24-23031 Loading. (1) Only stable or safely arranged loads must be handled.

(2) Powered industrial trucks must only be operated if the load is within the rated capacity including long, high or multiple-tiered loads.

(3) Powered industrial trucks equipped with attachments must be operated as partially loaded trucks when not handling a load.

(4) A load engaging means must be placed under the load as far as possible; the mast must be carefully tilted backward to stabilize the load.

(5) Tilting forward with load engaging means elevated must be prohibited except to pick up a load. An elevated load must not be tilted forward except when the load is in a deposit

position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load must be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23033, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23031, filed 5/9/73 and Order 73-4, § 296-24-23031, filed 5/7/73.]

WAC 296-24-23033 Operation of the truck. (1) A powered industrial truck found to be in need of repair, defective, or in any way unsafe, must be taken out of service until it has been restored to safe operating condition.

(2) Fuel tanks must not be filled while the engine is running. Spillage must be avoided.

(3) Spillage of oil or fuel must be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.

(4) Powered industrial trucks must not be operated with a leak in the fuel system.

(5) Open flames must not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23033, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23033, filed 5/9/73 and Order 73-4, § 296-24-23033, filed 5/7/73.]

WAC 296-24-23035 Maintenance of industrial trucks. (1) Powered industrial trucks not in safe operating condition must be removed from service. All repairs must be made by authorized personnel.

(2) Employers must not allow repairs to be made in Classes I, II, and III locations.

(3) Repairs to the fuel and ignition systems of powered industrial trucks which involve fire hazards must be conducted only in locations designated for such repairs.

(4) Powered industrial trucks in need of repair to the electrical system must have the battery disconnected prior to starting such repairs.

(5) All parts of any such industrial truck requiring replacement must be replaced only with parts equivalent to those used in the original design.

(6) Powered industrial trucks must not be altered so that the relative positions of the various parts are different from that originally received from the manufacturer. Employers must also insure that the powered industrial trucks are not altered, either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts, except as provided in WAC 296-24-23003. Additional counterweighting of powered industrial trucks must not be done unless approved by the truck manufacturer.

(7) Powered industrial trucks must be examined before being placed in service, and must not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination must be made at least daily.

Where industrial trucks are used on a round-the-clock basis, they must be examined after each shift. Defects when found must be immediately reported and corrected.

(8) Water mufflers must be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75 percent of the filled capacity. Powered industrial trucks with mufflers having screens or other parts that may become clogged must not be operated while such screens or

parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system must immediately be removed from service, and not returned to service until the cause for the emission of such sparks and flames has been eliminated.

(9) When the temperature of any part of any powered industrial truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, it must be removed from service and not returned to service until the cause for such overheating has been eliminated.

(10) Powered industrial trucks must be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100°F.) solvents shall not be used. High flash point (at or above 100°F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard must be consonant with the agent or solvent used.

(11) Powered industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features specified for LP or LPS designated trucks. Such conversion equipment must be approved. The description of the component parts of this conversion system and the recommended method of installation on specific trucks are contained in the "listed by report."

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23035, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23035, filed 5/9/73 and Order 73-4, § 296-24-23035, filed 5/7/73.]

WAC 296-24-23037 Appendix 1 stability of powered industrial trucks nonmandatory appendix. (1) **Definitions.** The following definitions may help to explain the principle of stability:

"**Center of gravity**" means the point on an object at which all of the object's weight is concentrated. For symmetrical loads, the center of gravity is at the middle of the load.

"**Counterweight**" means the weight that is built into the truck's basic structure and is used to offset the load's weight and to maximize the vehicle's resistance to tipping over.

"**Fulcrum**" means the truck's axis of rotation when it tips over.

"**Grade**" means the slope of a surface, which is usually measured as the number of feet of rise or fall over a hundred foot horizontal distance (the slope is expressed as a percent).

"**Lateral stability**" means a truck's resistance to overturning sideways.

"**Line of action**" means an imaginary vertical line through an object's center of gravity.

"**Load center**" means the horizontal distance from the load's edge (or the fork's or other attachment's vertical face) to the line of action through the load's center of gravity.

"**Longitudinal stability**" means the truck's resistance to overturning forward or rearward.

"**Moment**" means the product of the object's weight times the distance from a fixed point (usually the fulcrum). In the case of a powered industrial truck, the distance is measured from the point at which the truck will tip over to the object's line of action. The distance is always measured perpendicular to the line of action.

"Track" means the distance between the wheels on the same axle of the truck.

"Wheelbase" means the distance between the centerline of the vehicle's front and rear wheels.

(2) **General.**

(a) Determining the stability of a powered industrial truck is simple once a few basic principles are understood. There are many factors that contribute to a vehicle's stability: The vehicle's wheelbase, track, and height; the load's weight distribution; and the vehicle's counterweight location (if the vehicle is so equipped).

(b) The "stability triangle," used in most stability discussions, demonstrates stability simply (see Figures 2 and 3).

(3) **Basic principles.**

(a) Whether an object is stable depends on the object's "moment" (see definitions, this section) at one end of a system being greater than, equal to, or smaller than the object's moment at the system's other end. This principle can be seen in the way a seesaw or teeter-totter works: That is, if the product of the load and distance from the fulcrum (moment) is equal to the moment at the device's other end, the device is balanced and it will not move. However, if there is a greater moment at one end of the device, the device will try to move downward at the end with the greater moment.

(b) The longitudinal stability of a counterbalanced powered industrial truck depends on the vehicle's moment and the load's moment. In other words, if the mathematic product of the load moment (the distance from the front wheels, the approximate point at which the vehicle would tip forward) to the load's center of gravity times the load's weight is less than the vehicle's moment, the system is balanced and will not tip forward. However, if the load's moment is greater than the vehicle's moment, the greater load-moment will force the truck to tip forward.

(4) **The stability triangle.**

(a) Almost all counterbalanced powered industrial trucks have a three-point suspension system, that is, the vehicle is supported at three points. This is true even if the vehicle has four wheels. The truck's steer axle is attached to the truck by a pivot pin in the axle's center. When the points are connected with imaginary lines, this three-point support forms a triangle called the stability triangle. Figure 2 depicts the stability triangle.

(b) When the vehicle's line of action, or load center, falls within the stability triangle, the vehicle is stable and will not tip over. However, when the vehicle's line of action or the vehicle/load combination falls outside the stability triangle, the vehicle is unstable and may tip over.

(5) **Longitudinal stability.**

(a) The axis of rotation when a truck tips forward is the front wheels' points of contact with the pavement. When a powered industrial truck tips forward, the truck will rotate about this line. When a truck is stable, the vehicle-moment must exceed the load-moment. As long as the vehicle-moment is equal to or exceeds the load-moment, the vehicle will not tip over. On the other hand, if the load-moment slightly exceeds the vehicle-moment, the truck will begin to tip forward, thereby causing the rear to lose contact with the floor or ground and resulting in loss of steering control. If the

load-moment greatly exceeds the vehicle-moment, the truck will tip forward.

(b) To determine the maximum safe load-moment, the truck manufacturer normally rates the truck at a maximum load at a given distance from the front face of the forks. The specified distance from the front face of the forks to the line of action of the load is commonly called the load center. Because larger trucks normally handle loads that are physically larger, these vehicles have greater load centers. Trucks with a capacity of 30,000 pounds or less are normally rated at a given load weight at a 24-inch load center. Trucks with a capacity greater than 30,000 pounds are normally rated at a given load weight at a 36-or 48-inch load center. To safely operate the vehicle, the operator should always check the data plate to determine the maximum allowable weight at the rated load center.

(c) Although the true load-moment distance is measured from the front wheels, this distance is greater than the distance from the front face of the forks. Calculating the maximum allowable load-moment using the load-center distance always provides a lower load-moment than the truck was designed to handle. When handling unusual loads, such as those that are larger than 48 inches long (the center of gravity is greater than 24 inches) or that have an offset center of gravity, etc., a maximum allowable load-moment should be calculated and used to determine whether a load can be safely handled. For example, if an operator is operating a 3,000-pound capacity truck (with a 24-inch load center), the maximum allowable load-moment is 72,000 inch-pounds (3,000 times 24). If a load is 60 inches long (30-inch load center), then the maximum that this load can weigh is 2,400 pounds (72,000 divided by 30).

(6) **Lateral stability.**

(a) The vehicle's lateral stability is determined by the line of action's position (a vertical line that passes through the combined vehicle's and load's center of gravity) relative to the stability triangle. When the vehicle is not loaded, the truck's center of gravity location is the only factor to be considered in determining the truck's stability. As long as the line of action of the combined vehicle's and load's center of gravity falls within the stability triangle, the truck is stable and will not tip over. However, if the line of action falls outside the stability triangle, the truck is not stable and may tip over. Refer to Figure 3.

(b) Factors that affect the vehicle's lateral stability include the load's placement on the truck, the height of the load above the surface on which the vehicle is operating, and the vehicle's degree of lean.

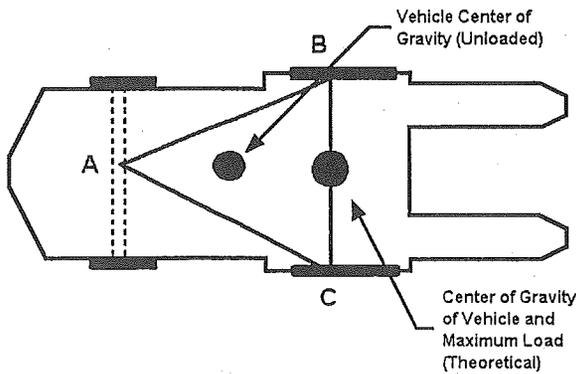
(7) **Dynamic stability.**

(a) Up to this point, the stability of a powered industrial truck has been discussed without considering the dynamic forces that result when the vehicle and load are put into motion. The weight's transfer and the resultant shift in the center of gravity due to the dynamic forces created when the machine is moving, braking, cornering, lifting, tilting, and lowering loads, etc., are important stability considerations.

(b) When determining whether a load can be safely handled, the operator should exercise extra caution when handling loads that cause the vehicle to approach its maximum design characteristics. For example, if an operator must han-

When a maximum load, the load should be carried at the lowest position possible, the truck should be accelerated slowly and evenly, and the forks should be tilted forward cautiously. However, no precise rules can be formulated to cover all of these eventualities.

Figure 2



Notes:

1. When the vehicle is loaded, the combined center of gravity shifts toward line B-C. Theoretically the maximum load will result in the center of gravity at the line B-C. In actual practice, the combined center of gravity should never be at line B-C.
2. The addition of additional counterweight will cause the truck center of gravity to shift toward point A and result in a truck that is less stable laterally.

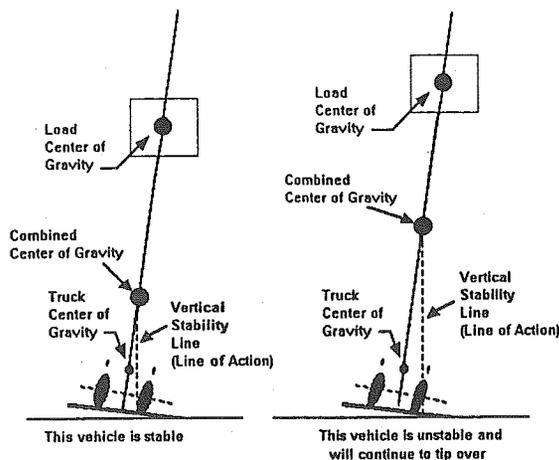


Figure - 3

When the vehicle's line of action, or load center falls within the stability triangle, the vehicle is stable and will not tip over. However, when the vehicle's line of action or the vehicle/load combination falls outside the stability triangle, the vehicle is unstable and may tip over.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23037, filed 12/21/99, effective 3/1/00.]

WAC 296-24-23529 Operators. (1) Cranes shall be operated only by regular crane operators, authorized substi-
[2000 WAC Supp—page 912]

tutes who have had adequate experience and training under the supervision of a competent operator, or by crane repairmen or inspectors.

(2) Crane operators must be able to communicate with others at the worksite sufficiently to understand the signs, notices, operation instructions, and the signal code in use to ensure safe operation of the crane.

(3) No minor under eighteen years of age shall be employed in occupations involving the operation of any power-driven hoisting apparatus or assisting in such operations by work such as hooking on, loading slings, rigging gear, etc.

(4) No person shall be permitted to operate a crane whose hearing or eye-sight is impaired, or who may be suffering from heart disease or similar ailments. The following physical qualifications shall be minimum requirements for overhead and gantry crane operators and trainees:

(a) They shall have vision of at least 20/30 in one eye, and 20/50 in the other, with or without corrective lenses.

(b) They shall be able to distinguish colors, regardless of position of colors, if color differential is required for operation.

(c) Their hearing, with or without hearing aid, must be adequate for a specific operation.

(d) They shall have sufficient strength, endurance, agility, coordination, and speed of reaction to meet the demands of equipment operation.

(e) They shall have normal depth perception, field of vision, reaction time, manual dexterity, coordination and no tendencies to dizziness or similar undesirable characteristics.

(f) Evidence of physical defects, or emotional instability which could render the operator or trainee a hazard to their self or others, or could interfere with their safe performance may be sufficient cause for disqualification. In such cases, specialized clinical or medical judgments or tests shall be required (which include annual medical certification for recovered heart attack patients).

(g) Evidence that an operator or trainee is subject to seizures or loss of physical control shall be sufficient reason for disqualification. Specialized medical tests shall be required to substantiate these conditions.

(5) Persons who have recovered from a heart attack shall be exempted from the provisions of subsection (4) of this section, as it pertains to their heart condition, provided:

(a) A medical release is obtained from their attending medical doctor.

(b) The release shall state that the operation of a crane will not present a hazard to their self or others.

(c) An examination by a medical doctor, and renewal of the work release certification is required annually.

(6) The operator shall be fully familiar with all crane rules and with the crane mechanism and its proper care. Needed adjustments or repairs shall be reported at once to the proper authority.

(7) The operator shall not eat, smoke or read while actually engaged in the operation of the crane, or operate the crane when physically unfit.

(8) The operator or someone especially designated shall properly lubricate all working parts of the crane.

(9) Cranes shall be kept clean.

(10) Whenever the operator finds the main or emergency switch open, it shall not be closed, even when starting on regular duty, until it is determined that no one is on or about the crane. The crane shall not be oiled or repaired unless the main switch is open.

(11) If the power goes off, the operator shall immediately throw all controllers to "off" position until the power is again available.

(12) Before closing the main switch the operator shall make sure that all controllers are in "off" position until the power is again available.

(13) The operator shall recognize signals only from the employee who is supervising the lift. Operating signals shall follow an established standard. Whistle signals may be used where one crane only is in operation.

(14) Bumping into runway stops or other cranes shall be avoided. When the operator is ordered to engage with or push other cranes, it shall be done with special care for the safety of persons on or below cranes.

(15) When lowering a load, the operator shall proceed carefully and make sure the load is under safe control.

(16) When leaving the cage the operator shall throw all controllers to "off" position and open the main switch.

(17) If the crane is located out-of-doors the operator shall lock the crane in a secure position to prevent it from being blown along or off the track by a severe wind.

(18) Operators shall not permit anyone to ride on the load or hooks, unless using a lifeline or safety device approved by the department.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-23529, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23529, filed 7/20/94, effective 9/20/94. 89-11-035 (Order 89-03), § 296-24-23529, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-23529, filed 5/9/73 and Order 73-4, § 296-24-23529, filed 5/7/73.]

WAC 296-24-47505 Basic rules. (1) Odorizing gases.

(a) All liquefied petroleum gases shall be effectively odorized by an approved agent of such character as to indicate positively, by distinct odor, the presence of gas down to concentration in air of not over one-fifth the lower limit of flammability. Odorization, however, is not required if harmful in the use of further processing of the liquefied petroleum gas, or if odorization will serve no useful purpose as a warning agent in such use or further processing.

(b) The odorization requirement of (a) of this subsection shall be considered to be met by the use of 1.0 pounds of ethyl mercaptan, 1.0 pounds of thiophane or 1.4 pounds of amyl mercaptan per ten thousand gallons of LP-gas. However, this listing of odorants and quantities shall not exclude the use of other odorants that meet the odorization requirements of (a) of this subsection.

(2) Approval of equipment and systems.

(a) Each system utilizing DOT containers in accordance with 49 CFR Part 178 shall have its container valves, connectors, manifold valve assemblies, and regulators approved.

(b) Each system for domestic or commercial use utilizing containers of two thousand gallons or less water capacity, other than those constructed in accordance with 49 CFR Part 178, shall consist of a container assembly and one or more regulators, and may include other parts. The system as a unit

or the container assembly as a unit, and the regulator or regulators, shall be individually listed.

(c) In systems utilizing containers of over two thousand gallons water capacity, each regulator, container, valve, excess flow valve, gaging device, and relief valve installed on or at the container, shall have its correctness as to design, construction, and performance determined by listing by a nationally recognized testing laboratory. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(d) The provisions of subsection (3)(a) of this section shall not be construed as prohibiting the continued use or reinstallation of containers constructed and maintained in accordance with the standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58 in effect at the time of fabrication.

(e) Containers used with systems embodied in this section and WAC 296-24-47509 (3)(c) and 296-24-47513, shall be constructed, tested, and stamped in accordance with DOT specifications effective at the date of their manufacture.

(3) Requirements for construction and original test of containers.

(a) Containers used with systems embodied in WAC 296-24-47509, 296-24-47513 through 296-24-47517, except as provided in WAC 296-24-47511 (3)(c), shall be designed, constructed, and tested in accordance with the Rules for Construction of Unfired Pressure Vessels, section VIII, Division 1, American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1968 edition.

(b) Containers constructed according to the 1949 and earlier editions of the ASME Code do not have to comply with U-2 through U-10 and U-19 thereof. Containers constructed according to U-70 in the 1949 and earlier editions do not meet the requirements of this section.

(c) Containers designed, constructed, and tested prior to July 1, 1961, according to the Code for Unfired Pressure Vessels for Petroleum Liquids and Gases, 1951 edition with 1954 Addenda, of the American Petroleum Institute and the American Society of Mechanical Engineers shall be considered in conformance. Containers constructed according to API-ASME Code do not have to comply with section I or with appendix to section I. W-601 to W-606 inclusive in the 1943 and earlier editions do not apply.

(4) Welding of containers.

(a) Welding to the shell, head, or any other part of the container subject to internal pressure, shall be done in compliance with the code under which the tank was fabricated. Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the tank manufacturer.

(b) Where repair or modification involving welding of DOT containers is required, the container shall be returned to a qualified manufacturer making containers of the same type, and the repair or modification made in compliance with DOT regulations.

(5) Markings on container.

(a) Each container covered in subsection (3)(a) of this section except as provided in subsection (2)(d) of this section shall be marked as specified in the following:

(i) With a marking identifying compliance with, and other markings required by, the rules of the reference under

which the container is constructed; or with the stamp and other markings required by the laws, rules or regulations as administered by the state of Washington, department of labor and industries pertaining to such containers.

(ii) With notation as to whether the container is designed for underground or aboveground installation or both. If intended for both and different style hoods are provided, the marking shall indicate the proper hood for each type of installation.

(iii) With the name and address of the supplier of the container, or with the trade name of the container.

(iv) With the water capacity of the container in pounds or gallons, United States standard.

(v) With the pressure in p.s.i.g., for which the container is designed.

(vi) With the wording "This container shall not contain a product having a vapor pressure in excess of—p.s.i.g. at 100°F," see WAC 296-24-47509, Table H-31.

(vii) With the tare weight in pounds or other identified unit of weight for containers with a water capacity of three hundred pounds or less.

(viii) With marking indicating the maximum level to which the container may be filled with liquid at temperatures between 20°F and 130°F, except on containers provided with fixed maximum level indicators or which are filled by weighing. Markings shall be increments of not more than 20°F. This marking may be located on the liquid level gaging device.

(ix) With the outside surface area in square feet.

(b) Markings specified shall be on a metal nameplate attached to the container and located in such a manner as to remain visible after the container is installed.

(c) When LP-gas and one or more other gases are stored or used in the same area, the containers shall be marked to identify their content. Marking shall be in compliance with American National Standard Z48.1-1954, "Method of Marking Portable Compressed Gas Containers to Identify the Material Contained."

(6) Location of containers and regulating equipment.

(a) Containers, and first stage regulating equipment if used, shall be located outside of buildings, except under one or more of the following:

(i) In buildings used exclusively for container charging, vaporization pressure reduction, gas mixing, gas manufacturing, or distribution.

(ii) When portable use is necessary and in accordance with WAC 296-24-47507(5).

(iii) LP-gas fueled stationary or portable engines in accordance with WAC 296-24-47511 (11) or (12).

(iv) LP-gas fueled industrial trucks used in accordance with WAC 296-24-47511(13).

(v) LP-gas fueled vehicles garaged in accordance with WAC 296-24-47511(14).

(vi) Containers awaiting use or resale when stored in accordance with WAC 296-24-47513.

(b) Each individual container shall be located with respect to the nearest important building or group of buildings or line of adjoining property which may be built on in accordance with Table H-23.

TABLE H-23

Water capacity per container	Minimum distances		
	Containers		Between above-ground containers
	Under-ground	Above-ground	
Less than 125 gals ¹	10 feet	None	None
125 to 250 gallons	10 feet	10 feet	None.
251 to 500 gallons	10 feet	10 feet	3 feet.
501 to 2,000 gallons	25 feet ²	25 feet ²	3 feet.
2,001 to 30,000 gallons	50 feet	50 feet	5 feet.
30,001 to 70,000 gallons	50 feet	75 feet	1/4 of sum diameters of adjacent containers.
70,001 to 90,000 gallons	50 feet	100 feet	

¹If the aggregate water capacity of a multicontainer installation at a consumer site is five hundred one gallons or greater, the minimum distance shall comply with the appropriate portion of this table, applying the aggregate capacity rather than the capacity per container. If more than one installation is made, each installation shall be separated from another installation by at least twenty-five feet. Do not apply the MINIMUM DISTANCES BETWEEN ABOVE-GROUND CONTAINERS to such installations.

²Note: The above distance requirements may be reduced to not less than ten feet for a single container of one thousand two hundred gallons water capacity or less, providing such a container is at least twenty-five feet from any other LP-gas container of more than one hundred twenty-five gallons water capacity.

(c) Containers installed for use shall not be stacked one above the other.

(d) In industrial installations involving containers of one hundred eighty thousand gallons aggregate water capacity or more, where serious mutual exposures between the container and adjacent properties prevail, firewalls or other means of special protection designed and constructed in accordance with good engineering practices are required.

(e) In the case of buildings devoted exclusively to gas manufacturing and distributing operations, the distances required by Table H-23 may be reduced provided that in no case shall containers of water capacity exceeding five hundred gallons be located closer than ten feet to such gas manufacturing and distributing buildings.

(f) Readily ignitable material such as weeds and long dry grass shall be removed within ten feet of any container.

(g) The minimum separation between liquefied petroleum gas containers and flammable liquid tanks shall be twenty feet, and the minimum separation between a container and the centerline of the dike shall be ten feet. The foregoing provision shall not apply when LP-gas containers of one hundred twenty-five gallons or less capacity are installed adjacent to Class III flammable liquid tanks of two hundred seventy-five gallons or less capacity.

(h) Suitable means shall be taken to prevent the accumulation of flammable liquids under adjacent liquefied petro-

leum gas containers, such as by diking, diversion curbs, or grading.

(i) When dikes are used with flammable liquid tanks, no liquefied petroleum gas containers shall be located within the diked area.

(7) Container valves and container accessories.

(a) Valves, fittings, and accessories connected directly to the container including primary shutoff valves, shall have a rated working pressure of at least 250 p.s.i.g. and shall be of material and design suitable for LP-gas service. Cast iron shall not be used for container valves, fittings, and accessories. This does not prohibit the use of container valves made of malleable or nodular iron.

(b) Connections to containers, except safety relief connections, liquid level gaging devices, and plugged openings, shall have shutoff valves located as close to the container as practicable.

(c) Excess flow valves, where required shall close automatically at the rated flows of vapor or liquid as specified by the manufacturer. The connections or line including valves, fittings, etc., being protected by an excess flow valve shall have a greater capacity than the rated flow of the excess flow valve.

(d) Liquid level gaging devices which are so constructed that outward flow of container contents shall not exceed that passed by a No. 54 drill size opening, need not be equipped with excess flow valves.

(e) Openings from container or through fittings attached directly on container to which pressure gage connection is made, need not be equipped with shutoff or excess flow valves if such openings are restricted to not larger than No. 54 drill size opening.

(f) Except as provided in WAC 296-24-47507 (5)(a)(ii), excess flow and back pressure check valves where required by this section shall be located inside of the container or at a point outside where the line enters the container; in the latter case, installation shall be made in such manner that any undue strain beyond the excess flow or back pressure check valve will not cause breakage between the container and such valve.

(g) Excess flow valves shall be designed with a bypass, not to exceed a No. 60 drill size opening to allow equalization of pressures.

(h) Containers of more than thirty gallons water capacity and less than two thousand gallons water capacity, filled on a volumetric basis, and manufactured after December 1, 1963, shall be equipped for filling into the vapor space.

(8) Piping—Including pipe, tubing, and fittings.

(a) Pipe, except as provided in WAC 296-24-47511 (6)(a) shall be wrought iron or steel (black or galvanized), brass, copper, or aluminum alloy. Aluminum alloy pipe shall be at least Schedule 40 in accordance with the specifications for Aluminum Alloy Pipe, American National Standards Institute (ANSI) H38.7-1969 (ASTM, B241-1969), except that the use of alloy 5456 is prohibited and shall be suitably marked at each end of each length indicating compliance with American National Standard Institute specifications. Aluminum alloy pipe shall be protected against external corrosion when it is in contact with dissimilar metals other than galvanized steel, or its location is subject to repeated wetting

by such liquids as water (except rain water), detergents, sewage, or leaking from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, may be considered suitable protection. The maximum nominal pipe size for aluminum pipe shall be three-fourths inch and shall not be used for pressures exceeding 20 p.s.i.g. Aluminum alloy pipe shall not be installed within six inches of the ground.

(i) Vapor piping with operating pressures not exceeding 125 p.s.i.g. shall be suitable for a working pressure of at least 125 p.s.i.g. Pipe shall be at least Schedule 40 ASTM A-53-69, Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal.

(ii) Vapor piping with operating pressures over 125 p.s.i.g. and all liquid piping shall be suitable for a working pressure of at least 250 p.s.i.g. Pipe shall be at least Schedule 80 if joints are threaded or threaded and back welded. At least Schedule 40 (ASTM A-53-1969 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal) shall be used if joints are welded, or welded and flanged.

(b) Tubing shall be seamless and of copper, brass, steel, or aluminum alloy. Copper tubing shall be of Type K or L or equivalent as covered in the Specification for Seamless Copper Water Tube, ANSI H23.1-1970 (ASTM B88-1969). Aluminum alloy tubing shall be of Type A or B or equivalent as covered in Specification ASTM B210-1968 and shall be suitably marked every eighteen inches indicating compliance with ASTM specifications. The minimum nominal wall thickness of copper tubing and aluminum alloy tubing shall be as specified in Table H-24 and Table H-25.

TABLE H-24

WALL THICKNESS OF COPPER TUBING¹

Note: The standard size by which tube is designated is one-eighth-inch smaller than its nominal outside diameter.

Standard size (inches)	Nominal O.D. (inches)	Nominal wall thickness (inches)	
		Type K	Type L
1/4	0.375	0.035	0.030
3/8	0.500	0.049	0.035
1/2	0.625	0.049	0.040
5/8	0.750	0.049	0.042
3/4	0.875	0.065	0.045
1	1.125	0.065	0.050
1 1/4	1.375	0.065	0.055
1 1/2	1.625	0.072	0.060
2	2.125	0.083	0.070

¹Based on data in Specification for Seamless Copper Water Tubing, ANSI H23.1-1970 (ASTM B-88-69).

TABLE H-25

WALL THICKNESS OF ALUMINUM ALLOY TUBING¹

Outside diameter (inches)	Nominal wall thickness (inches)	
	Type A	Type B
3/8	0.035	0.049
1/2	0.035	0.049
5/8	0.042	0.049
3/4	0.049	0.058

¹Based on data in Standard Specification for Aluminum-Alloy Drawn Seamless Coiled Tubes for Special Purpose Applications, ASTM B210-68.

Aluminum alloy tubing shall be protected against external corrosion when it is in contact with dissimilar metals other than galvanized steel, or its location is subject to repeated wetting by liquids such as water (except rainwater), detergents, sewage, or leakage from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, may be considered suitable protection. The maximum outside diameter for aluminum alloy tubing shall be three-fourths inch and shall not be used for pressures exceeding 20 p.s.i.g. Aluminum alloy tubing shall not be installed within six inches of the ground.

(c) In systems where the gas in liquid form without pressure reduction enters the building, only heavy walled seamless brass or copper tubing with an internal diameter not greater than three thirty-seconds inch, and a wall thickness of not less than three sixty-fourths inch shall be used. This requirement shall not apply to research and experimental laboratories, buildings, or separate fire divisions of buildings used exclusively for housing internal combustion engines, and to commercial gas plants or bulk stations where containers are charged, nor to industrial vaporizer buildings, nor to buildings, structures, or equipment under construction or undergoing major renovation.

(d) Pipe joints may be screwed, flanged, welded, soldered, or brazed with a material having a melting point exceeding 1,000°F. Joints on seamless copper, brass, steel, or aluminum alloy gas tubing shall be made by means of approved gas tubing fittings, or soldered or brazed with a material having a melting point exceeding 1,000°F.

(e) For operating pressures of 125 p.s.i.g. or less, fittings shall be designed for a pressure of at least 125 p.s.i.g. For operating pressures above 125 p.s.i.g., fittings shall be designed for a minimum of 250 p.s.i.g.

(f) The use of threaded cast iron pipe fittings such as ells, tees, crosses, couplings, and unions is prohibited. Aluminum alloy fittings shall be used with aluminum alloy pipe and tubing. Insulated fittings shall be used where aluminum alloy pipe or tubing connects with a dissimilar metal.

(g) Strainers, regulators, meters, compressors, pumps, etc., are not to be considered as pipe fittings. This does not prohibit the use of malleable, nodular, or higher strength gray iron for such equipment.

(h) All materials such as valve seats, packing, gaskets, diaphragms, etc., shall be of such quality as to be resistant to the action of liquefied petroleum gas under the service conditions to which they are subjected.

(i) All piping, tubing, or hose shall be tested after assembly and proved free from leaks at not less than normal operating pressures. After installation, piping and tubing of all domestic and commercial systems shall be tested and proved free of leaks using a manometer or equivalent device that will indicate a drop in pressure. Test shall not be made with a flame.

(j) Provision shall be made to compensate for expansion, contraction, jarring, and vibration, and for settling. This may be accomplished by flexible connections.

(k) Piping outside buildings may be buried, above ground, or both, but shall be well supported and protected against physical damage. Where soil conditions warrant, all piping shall be protected against corrosion. Where condensation may occur, the piping shall be pitched back to the container, or suitable means shall be provided for revaporization of the condensate.

(9) Hose specifications.

(a) Hose shall be fabricated of materials that are resistant to the action of LP-gas in the liquid and vapor phases. If wire braid is used for reinforcing the hose, it shall be of corrosion-resistant material such as stainless steel.

(b) Hose subject to container pressure shall be marked "LP-gas" or "LPG" at not greater than ten-foot intervals.

(c) Hose subject to container pressure shall be designed for a bursting pressure of not less than 1,250 p.s.i.g.

(d) Hose subject to container pressure shall have its correctness as to design construction and performance determined by being listed (see WAC 296-24-47501(15)).

(e) Hose connections subject to container pressure shall be capable of withstanding, without leakage, a test pressure of not less than 500 p.s.i.g.

(f) Hose and hose connections on the low-pressure side of the regulator or reducing valve shall be designed for a bursting pressure of not less than 125 p.s.i.g. or five times the set pressure of the relief devices protecting that portion of the system, whichever is higher.

(g) Hose may be used on the low-pressure side of regulators to connect to other than domestic and commercial gas appliances under the following conditions:

(i) The appliances connected with hose shall be portable and need a flexible connection.

(ii) For use inside buildings the hose shall be of minimum practical length, but shall not exceed six feet except as provided in WAC 296-24-47507 (5)(a)(vii) and shall not extend from one room to another, nor pass through any walls, partitions, ceilings, or floors. Such hose shall not be concealed from view or used in a concealed location. For use outside of buildings, the hose may exceed this length but shall be kept as short as practical.

(iii) The hose shall be approved and shall not be used where it is likely to be subjected to temperatures above 125°F. The hose shall be securely connected to the appliance and the use of rubber slip ends shall not be permitted.

(iv) The shutoff valve for an appliance connected by hose shall be in the metal pipe or tubing and not at the appliance end of the hose. When shutoff valves are installed close to each other, precautions shall be taken to prevent operation of the wrong valve.

(v) Hose used for connecting to wall outlets shall be protected from physical damage.

(10) Safety devices.

(a) Every container except those constructed in accordance with DOT specifications and every vaporizer (except motor fuel vaporizers and except vaporizers described in subsection (11)(b)(iii) of this section and WAC 296-24-47509 (4)(e)(i)) whether heated by artificial means or not, shall be provided with one or more safety relief valves of spring-loaded or equivalent type. These valves shall be arranged to afford free vent to the outer air with discharge not less than

five feet horizontally away from any opening into the building which is below such discharge. The rate of discharge shall be in accordance with the requirements of (b) or (d) of this subsection in the case of vaporizers.

(b) Minimum required rate of discharge in cubic feet per minute of air at one hundred twenty percent of the maximum permitted start to discharge pressure for safety relief valves to be used on containers other than those constructed in accordance with DOT specification shall be as follows:

Surface area (sq. ft.)	Flow rate CFM air
20 or less	626
25	751
30	872
35	990
40	1,100
45	1,220
50	1,330
55	1,430
60	1,540
65	1,640
70	1,750
75	1,850
80	1,950
85	2,050
90	2,150
95	2,240
100	2,340
105	2,440
110	2,530
115	2,630
120	2,720
125	2,810
130	2,900
135	2,990
140	3,080
145	3,170
150	3,260
155	3,350
160	3,440
165	3,530
170	3,620
175	3,700
180	3,790
185	3,880
190	3,960
195	4,050
200	4,130
210	4,300
220	4,470
230	4,630
240	4,800
250	4,960
260	5,130
270	5,290
280	5,450
290	5,610
300	5,760
310	5,920
320	6,080
330	6,230
340	6,390
350	6,540
360	6,690
370	6,840
380	7,000
390	7,150
400	7,300
450	8,040
500	8,760
550	9,470

Surface area (sq. ft.)	Flow rate CFM air
600	10,170
650	10,860
700	11,550
750	12,220
800	12,880
850	13,540
900	14,190
950	14,830
1,000	15,470
1,050	16,100
1,100	16,720
1,150	17,350
1,200	17,960
1,250	18,570
1,300	19,180
1,350	19,780
1,400	20,380
1,450	20,980
1,500	21,570
1,550	22,160
1,600	22,740
1,650	23,320
1,700	23,900
1,750	24,470
1,800	25,050
1,850	25,620
1,900	26,180
1,950	26,750
2,000	27,310

Surface area = total outside surface area of container in square feet.

(c) When the surface area is not stamped on the nameplate or when the marking is not legible, the area can be calculated by using one of the following formulas:

(i) Cylindrical container with hemispherical heads:

$$\text{Area} = \text{Overall length} \times \text{outside diameter} \times 3.1416.$$

(ii) Cylindrical container with other than hemispherical heads:

$$\text{Area} = (\text{Overall length} + 0.3 \text{ outside diameter}) \times \text{outside diameter} \times 3.1416.$$

Note: This formula is not exact, but will give results within the limits of practical accuracy for the sole purpose of sizing relief valves.

(iii) Spherical container:

$$\text{Area} = \text{Outside diameter squared} \times 3.1416.$$

Flow rate-CFM air = Required flow capacity in cubic feet per minute of air at standard conditions, 60°F and atmospheric pressure (14.7 p.s.i.a.).

The rate of discharge may be interpolated for intermediate values of surface area. For containers with total outside surface area greater than two thousand square feet, the required flow rate can be calculated using the formula, flow rate-CFM air = 53.632 A^{0.82}.

A = Total outside surface area of the container in square feet.

Valves not marked "air" have flow rate marking in cubic feet per minute of liquefied petroleum gas. These can be converted to ratings in cubic feet per minute of air by multiplying the liquefied petroleum gas ratings by factors listed below.

Air flow ratings can be converted to ratings in cubic feet per minute of liquefied petroleum gas by dividing the air ratings by the factors listed below.

AIR CONVERSION FACTORS					
Container type	100	125	150	175	200
Air conversion factor	1.162	1.142	1.113	1.078	1.010

(d) Minimum required rate of discharge for safety relief valves for liquefied petroleum gas vaporizers (steam heated, water heated, and direct fired).

The minimum required rate of discharge for safety relief valves shall be determined as follows:

(i) Obtain the total surface area by adding the surface area of vaporizer shell in square feet directly in contact with LP-gas and the heat exchanged surface area in square feet directly in contact with LP-gas.

(ii) Obtain the minimum required rate of discharge in cubic feet of air per minute, at 60°F and 14.7 p.s.i.a. from (b) of this subsection, for this total surface area.

(e) Container and vaporizer safety relief valves shall be set to start-to-discharge, with relation to the design pressure of the container, in accordance with Table H-26.

TABLE H-26

Containers	Minimum (percent)	Maximum (percent)
ASME Code; Par. U-68, U-69—1949 and earlier editions	110	125
ASME Code; Par. U-200, U-201—1949 edition	88	100
ASME Code—1950, 1952, 1956, 1959, 1962, 1965 and 1968 (Division I) editions	88	100
API—ASME Code—all editions	88	100
DOT—As prescribed in 49 CFR Chapter I		

¹Manufacturers of safety relief valves are allowed a plus tolerance not exceeding ten percent of the set pressure marked on the valve.

(f) Safety relief devices used with systems employing containers other than those constructed according to DOT specifications shall be so constructed as to discharge at not less than the rates shown in (b) of this subsection, before the pressure is in excess of one hundred twenty percent of the maximum (not including the ten percent referred to in (e) of this subsection) permitted start to discharge pressure setting of the device.

(g) In certain locations sufficiently sustained high temperatures prevail which require the use of a lower vapor pressure product to be stored or the use of a higher designed pressure vessel in order to prevent the safety valves opening as the result of these temperatures. As an alternative the tanks may be protected by cooling devices such as by spraying, by shading, or other effective means.

(h) Safety relief valves shall be arranged so that the possibility of tampering will be minimized. If pressure setting or adjustment is external, the relief valves shall be provided with approved means for sealing adjustment.

(i) Shutoff valves shall not be installed between the safety relief devices and the container, or the equipment or piping to which the safety relief device is connected except that a shutoff valve may be used where the arrangement of this valve is such that full required capacity flow through the safety relief device is always afforded.

(j) Safety relief valves shall have direct communication with the vapor space of the container at all times.

(k) Each container safety relief valve used with systems covered by WAC 296-24-47509, 296-24-47511, and 296-24-47517, except as provided in WAC 296-24-47511 (3)(c) shall be plainly and permanently marked with the following: "Container type" of the pressure vessel on which the valve is designed to be installed; the pressure in p.s.i.g. at which the valve is set to discharge; the actual rate of discharge of the valve in cubic feet per minute of air at 60°F and 14.7 p.s.i.a.; and the manufacturer's name and catalog number, for example: T200-250-4050 AIR—indicating that the valve is suitable for use on a Type 200 container, that it is set to start to discharge at 250 p.s.i.g.; and that its rate of discharge is four thousand fifty cubic feet per minute of air as determined in (b) of this subsection.

(l) Safety relief valve assemblies, including their connections, shall be of sufficient size so as to provide the rate of flow required for the container on which they are installed.

(m) A hydrostatic relief valve shall be installed between each pair of shutoff valves on liquefied petroleum gas liquid piping so as to relieve into a safe atmosphere. The start-to-discharge pressure setting of such relief valves shall not be in excess of 500 p.s.i.g. The minimum setting on relief valves installed in piping connected to other than DOT containers shall not be lower than one hundred forty percent of the container relief valve setting and in piping connected to DOT containers not lower than 400 p.s.i.g. Such a relief valve should not be installed in the pump discharge piping if the same protection can be provided by installing the relief valve in the suction piping. The start-to-discharge pressure setting of such a relief valve, if installed on the discharge side of a pump, shall be greater than the maximum pressure permitted by the recirculation device in the system.

(n) The discharge from any safety relief device shall not terminate in or beneath any building, except relief devices covered by subsection (6)(a)(i) through (vi) of this section, or WAC 296-24-47507 (4)(a) or (5).

(o) Container safety relief devices and regulator relief vents shall be located not less than five feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(11) Vaporizer and housing.

(a) Indirect fired vaporizers utilizing steam, water, or other heating medium shall be constructed and installed as follows:

(i) Vaporizers shall be constructed in accordance with the requirements of subsection (3)(a) through (c) of this section and shall be permanently marked as follows:

(A) With the code marking signifying the specifications to which the vaporizer is constructed.

(B) With the allowable working pressure and temperature for which the vaporizer is designed.

(C) With the sum of the outside surface area and the inside heat exchange surface area expressed in square feet.

(D) With the name or symbol of the manufacturer.

(ii) Vaporizers having an inside diameter of six inches or less exempted by the ASME Unfired Pressure Vessel Code, Section VIII of the ASME Boiler and Pressure Vessel Code—1968 shall have a design pressure not less than 250 p.s.i.g. and need not be permanently marked.

(iii) Heating or cooling coils shall not be installed inside a storage container.

(iv) Vaporizers may be installed in buildings, rooms, sheds, or lean-tos used exclusively for gas manufacturing or distribution, or in other structures of light, noncombustible construction or equivalent, well ventilated near the floor line and roof.

When vaporizing and/or mixing equipment is located in a structure or building not used exclusively for gas manufacturing or distribution, either attached to or within such a building, such structure or room shall be separated from the remainder of the building by a wall designed to withstand a static pressure of at least one hundred pounds per square foot. This wall shall have no openings or pipe or conduit passing through it. Such structure or room shall be provided with adequate ventilation and shall have a roof or at least one exterior wall of lightweight construction.

(v) Vaporizers shall have, at or near the discharge, a safety relief valve providing an effective rate of discharge in accordance with subsection (10)(d) of this section, except as provided in WAC 296-24-47509 (4)(e)(i).

(vi) The heating medium lines into and leaving the vaporizer shall be provided with suitable means for preventing the flow of gas into the heat systems in the event of tube rupture in the vaporizer. Vaporizers shall be provided with suitable automatic means to prevent liquid passing through the vaporizers to the gas discharge piping.

(vii) The device that supplies the necessary heat for producing steam, hot water, or other heating medium may be installed in a building, compartment, room, or lean-to which shall be ventilated near the floorline and roof to the outside. The device location shall be separated from all compartments or rooms containing liquefied petroleum gas vaporizers, pumps, and central gas mixing devices by a wall designed to withstand a static pressure of at least one hundred pounds per square foot. This wall shall have no openings or pipes or conduit passing through it. This requirement does not apply to the domestic water heaters which may supply heat for a vaporizer in a domestic system.

(viii) Gas-fired heating systems supplying heat exclusively for vaporization purposes shall be equipped with automatic safety devices to shut off the flow of gas to main burners, if the pilot light should fail.

(ix) Vaporizers may be an integral part of a fuel storage container directly connected to the liquid section or gas section or both.

(x) Vaporizers shall not be equipped with fusible plugs.

(xi) Vaporizer houses shall not have unprotected drains to sewers or sump pits.

(b) Atmospheric vaporizers employing heat from the ground or surrounding air shall be installed as follows:

(i) Buried underground, or

(ii) Located inside the building close to a point at which pipe enters the building provided the capacity of the unit does not exceed one quart.

(iii) Vaporizers of less than one quart capacity heated by the ground or surrounding air, need not be equipped with safety relief valves provided that adequate tests demonstrate that the assembly is safe without safety relief valves.

(c) Direct gas-fired vaporizers shall be constructed, marked, and installed as follows:

(i) In accordance with the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code—1968 that are applicable to the maximum working conditions for which the vaporizer is designed.

(ii) With the name of the manufacturer; rated BTU input to the burner; the area of the heat exchange surface in square feet; the outside surface of the vaporizer in square feet; and the maximum vaporizing capacity in gallons per hour.

(iii) Vaporizers may be connected to the liquid section or the gas section of the storage container, or both; but in any case there shall be at the container a manually operated valve in each connection to permit completely shutting off when desired, of all flow of gas or liquid from container to vaporizer.

(iv) Vaporizers with capacity not exceeding thirty-five gallons per hour shall be located at least five feet from container shutoff valves. Vaporizers having capacity of more than thirty-five gallons but not exceeding one hundred gallons per hour shall be located at least ten feet from the container shutoff valves. Vaporizers having a capacity greater than one hundred gallons per hour shall be located at least fifteen feet from container shutoff valves.

(v) Vaporizers may be installed in buildings, rooms, housings, sheds, or lean-tos used exclusively for vaporizing or mixing of liquefied petroleum gas. Vaporizing housing structures shall be of noncombustible construction, well ventilated near the floorline and the highest point of the roof. When vaporizer and/or mixing equipment is located in a structure or room attached to or within a building, such structure or room shall be separated from the remainder of the building by a wall designed to withstand a static pressure of at least one hundred pounds per square foot. This wall shall have no openings or pipes or conduit passing through it. Such structure or room shall be provided with adequate ventilation, and shall have a roof or at least one exterior wall of lightweight construction.

(vi) Vaporizers shall have at or near the discharge, a safety relief valve providing an effective rate of discharge in accordance with subsection (10)(d) of this section. The relief valve shall be so located as not to be subjected to temperatures in excess of 140°F.

(vii) Vaporizers shall be provided with suitable automatic means to prevent liquid passing from the vaporizer to the gas discharge piping of the vaporizer.

(viii) Vaporizers shall be provided with means for manually turning off the gas to the main burner and pilot.

(ix) Vaporizers shall be equipped with automatic safety devices to shut off the flow of gas to main burners if the pilot light should fail. When the flow through the pilot exceeds 2,000 B.T.U. per hour, the pilot also shall be equipped with an automatic safety device to shut off the flow of gas to the pilot should the pilot flame be extinguished.

(x) Pressure regulating and pressure reducing equipment if located within ten feet of a direct fired vaporizer shall be separated from the open flame by a substantially airtight non-combustible partition or partitions.

(xi) Except as provided in (c)(v) of this subsection, the following minimum distances shall be maintained between direct fired vaporizers and the nearest important building or group of buildings or line of adjoining property which may be built upon:

(A) Ten feet for vaporizers having a capacity of fifteen gallons per hour or less vaporizing capacity.

(B) Twenty-five feet for vaporizers having a vaporizing capacity of sixteen to one hundred gallons per hour.

(C) Fifty feet for vaporizers having a vaporizing capacity exceeding one hundred gallons per hour.

(xii) Direct fired vaporizers shall not raise the product pressure above the design pressure of the vaporizer equipment nor shall they raise the product pressure within the storage container above the pressure shown in the second column of Table H-31. (See WAC 296-24-47509.)

(xiii) Vaporizers shall not be provided with fusible plugs.

(xiv) Vaporizers shall not have unprotected drains to sewers or sump pits.

(d) Direct gas-fired tank heaters, shall be constructed and installed as follows:

(i) Direct gas-fired tank heaters, and tanks to which they are applied, shall only be installed above ground.

(ii) Tank heaters shall be permanently marked with the name of the manufacturer, the rated B.T.U. input to the burner, and the maximum vaporizing capacity in gallons per hour.

Note: Tank heaters may be an integral part of a fuel storage container directly connected to the container liquid section, or vapor section, or both.

(iii) Tank heaters shall be provided with a means for manually turning off the gas to the main burner and pilot.

(iv) Tank heaters shall be equipped with an automatic safety device to shut off the flow of gas to main burners, if the pilot light should fail. When flow through pilot exceeds 2,000 B.T.U. per hour, the pilot also shall be equipped with an automatic safety device to shut off the flow of gas to the pilot should the pilot flame be extinguished.

(v) Pressure regulating and pressure reducing equipment if located within ten feet of a direct fired tank heater shall be separated from the open flame by a substantially airtight non-combustible partition.

(vi) The following minimum distances shall be maintained between a storage tank heated by a direct fired tank heater and the nearest important building or group of buildings or line of adjoining property which may be built upon:

(A) Ten feet for storage containers of less than five hundred gallons water capacity.

(B) Twenty-five feet for storage containers of five hundred to one thousand two hundred gallons water capacity.

(C) Fifty feet for storage containers of over one thousand two hundred gallons water capacity.

(vii) No direct fired tank heater shall raise the product pressure within the storage container over seventy-five percent of the pressure set out in the second column of Table H-31. (See WAC 296-24-47509.)

(e) The vaporizer section of vaporizer-burners used for dehydrators or dryers shall be located outside of buildings; they shall be constructed and installed as follows:

(i) Vaporizer-burners shall have a minimum design pressure of 250 p.s.i.g. with a factor of safety of five.

(ii) Manually operated positive shutoff valves shall be located at the containers to shut off all flow to the vaporizer-burners.

(iii) Minimum distances between storage containers and vaporizer-burners shall be as follows:

Water capacity per container (gallons)	Minimum distances (feet)
Less than 501	10
501 to 2,000	25
Over 2,000	50

(iv) The vaporizer section of vaporizer-burners shall be protected by a hydrostatic relief valve. The relief valve shall be located so as not to be subjected to temperatures in excess of 140°F. The start-to-discharge pressure setting shall be such as to protect the components involved, but not less than 250 p.s.i.g. The discharge shall be directed upward and away from component parts of the equipment and away from operating personnel.

(v) Vaporizer-burners shall be provided with means for manually turning off the gas to the main burner and pilot.

(vi) Vaporizer-burners shall be equipped with automatic safety devices to shut off the flow of gas to the main burner and pilot in the event the pilot is extinguished.

(vii) Pressure regulating and control equipment shall be located or protected so that the temperatures surrounding this equipment shall not exceed 140°F except that equipment components may be used at higher temperatures if designed to withstand such temperatures.

(viii) Pressure regulating and control equipment when located downstream of the vaporizer shall be designed to withstand the maximum discharge temperature of the vapor.

(ix) The vaporizer section of vaporizer-burners shall not be provided with fusible plugs.

(x) Vaporizer coils or jackets shall be made of ferrous metal or high temperature alloys.

(xi) Equipment utilizing vaporizer-burners shall be equipped with automatic shutoff devices upstream and downstream of the vaporizer section connected so as to operate in the event of excessive temperature, flame failure, and, if applicable, insufficient airflow.

(12) Filling densities.

(a) The "filling density" is defined as the percent ratio of the weight of the gas in a container to the weight of water the container will hold at 60°F. All containers shall be filled according to the filling densities shown in Table H-27.

TABLE H-27
MAXIMUM PERMITTED FILLING DENSITY

	Above ground containers		Under-ground containers, all capacities
	0 to 1,200 U.S. gals. (1,000 imp. gal. at 60°F (15.6°C))	Over 1,200 U.S. gals. (1,000 imp. gal. at 60°F (15.6°C))	
	Percent	Percent	Percent
0.496-0.503	41	44	45
.504-.510	42	45	46
.511-.519	43	46	47
.520-.527	44	47	48
.528-.536	45	48	49
.537-.544	46	49	50
.545-.552	47	50	51
.553-.560	48	51	52
.561-.568	49	52	53
.569-.576	50	53	54
.577-.584	51	54	55
.585-.592	52	55	56
.593-.600	53	56	57

(b) Except as provided in (c) of this subsection, any container including mobile cargo tanks and portable tank containers regardless of size or construction, shipped under DOT jurisdiction or constructed in accordance with 49 CFR Chapter I specifications shall be charged according to 49 CFR Chapter I requirements.

(c) Portable containers not subject to DOT jurisdiction (such as, but not limited to, motor fuel containers on industrial and lift trucks, and farm tractors covered in subsection (5) of this section, or containers recharged at the installation) may be filled either by weight, or by volume using a fixed length dip tube gaging device.

(13) LP-gas in buildings.

(a) Vapor shall be piped into buildings at pressures in excess of 20 p.s.i.g. only if the buildings or separate areas thereof,

- (i) Are constructed in accordance with this section;
- (ii) Are used exclusively to house equipment for vaporization, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having similar hazard;

(iii) Buildings, structures, or equipment under construction or undergoing major renovation.

(b) Liquid may be permitted in buildings as follows:

(i) Buildings, or separate areas of buildings, used exclusively to house equipment for vaporization, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having similar hazard; and when such buildings, or separate areas thereof are constructed in accordance with this section.

(ii) Buildings, structures, or equipment under construction or undergoing major renovation provided the temporary piping meets the following conditions:

(A) Liquid piping inside the building shall conform to the requirements of subsection (8) of this section, and shall not exceed three-fourths iron pipe size. Copper tubing with an outside diameter of three-fourths inch or less may be used provided it conforms to Type K of Specifications for Seamless Water Tube, ANSI H23.1-1970 (ASTM B88-1969) (see WAC 296-24-47505 Table H-24). All such piping shall be protected against construction hazards. Liquid piping inside buildings shall be kept to a minimum. Such piping shall be securely fastened to walls or other surfaces so as to provide adequate protection from breakage and so located as to subject the liquid line to lowest ambient temperatures.

(B) A shutoff valve shall be installed in each intermediate branch line where it takes off the main line and shall be readily accessible. A shutoff valve shall also be placed at the appliance end of the intermediate branch line. Such shutoff valve shall be upstream of any flexible connector used with the appliance.

(C) Suitable excess flow valves shall be installed in the container outlet line supplying liquid LP-gas to the building. A suitable excess flow valve shall be installed immediately downstream of each shutoff valve. Suitable excess flow valves shall be installed where piping size is reduced and shall be sized for the reduced size piping.

(D) Hydrostatic relief valves shall be installed in accordance with subsection (10)(m) of this section.

(E) The use of hose to carry liquid between the container and the building or at any point in the liquid line, except at the appliance connector, shall be prohibited.

(F) Where flexible connectors are necessary for appliance installation, such connectors shall be as short as practicable and shall comply with subsection (8)(b) or (9) of this section.

(G) Release of fuel when any section of piping or appliances is disconnected shall be minimized by either of the following methods:

(I) Using an approved automatic quick-closing coupling (a type closing in both directions when coupled in the fuel line), or

(II) Closing the valve nearest to the appliance and allowing the appliance to operate until the fuel in the line is consumed.

(III) Portable containers shall not be taken into buildings except as provided in subsection (6)(a) of this section.

(14) Transfer of liquids. The employer shall assure that:

(a) At least one attendant shall remain close to the transfer connection from the time the connections are first made until they are finally disconnected, during the transfer of the product.

(b) Containers shall be filled or used only upon authorization of the owner.

(c) Containers manufactured in accordance with specifications of 49 CFR Part 178 and authorized by 49 CFR Chapter 1 as a "single trip" or "nonrefillable container" shall not be refilled or reused in LP-gas service.

(d) Gas or liquid shall not be vented to the atmosphere to assist in transferring contents of one container to another,

except as provided in WAC 296-24-47511 (5)(d) and except that this shall not preclude the use of listed pump utilizing LP-gas in the vapor phase as a source of energy and venting such gas to the atmosphere at a rate not to exceed that from a No. 31 drill size opening and provided that such venting and liquid transfer shall be located not less than fifty feet from the nearest important building.

(e) Filling of fuel containers for industrial trucks or motor vehicles from industrial bulk storage containers shall be performed not less than ten feet from the nearest important masonry-walled building or not less than twenty-five feet from the nearest important building or other construction and, in any event, not less than twenty-five feet from any building opening.

(f) Filling of portable containers, containers mounted on skids, fuel containers on farm tractors, or similar applications, from storage containers used in domestic or commercial service, shall be performed not less than fifty feet from the nearest important building.

(g) The filling connection and the vent from the liquid level gages in containers, filled at point of installation, shall not be less than ten feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(h) Fuel supply containers shall be gaged and charged only in the open air or in buildings especially provided for that purpose.

(i) The maximum vapor pressure of the product at 100°F which may be transferred into a container shall be in accordance with WAC 296-24-47509(2) and 296-24-47511(3). (For DOT containers use DOT requirements.)

(j) Marketers and users shall exercise precaution to assure that only those gases for which the system is designed, examined, and listed, are employed in its operation, particularly with regard to pressures.

(k) Pumps or compressors shall be designed for use with LP-gas. When compressors are used they shall normally take suction from the vapor space of the container being filled and discharge to the vapor space of the container being emptied.

(l) Pumping systems, when equipped with a positive displacement pump, shall include a recirculating device which shall limit the differential pressure on the pump under normal operating conditions to the maximum differential pressure rating of the pump. The discharge of the pumping system shall be protected so that pressure does not exceed 350 p.s.i.g. If a recirculation system discharges into the supply tank and contains a manual shutoff valve, an adequate secondary safety recirculation system shall be incorporated which shall have no means of rendering it inoperative. Manual shutoff valves in recirculation systems shall be kept open except during an emergency or when repairs are being made to the system.

(m) When necessary, unloading piping or hoses shall be provided with suitable bleeder valves for relieving pressure before disconnection.

(n) Agricultural air moving equipment, including crop dryers, shall be shut down when supply containers are being filled unless the air intakes and sources of ignition on the equipment are located fifty feet or more from the container.

(o) Agricultural equipment employing open flames or equipment with integral containers, such as flame cultivators, weed burners, and, in addition, tractors, shall be shut down during refueling.

(15) Tank car or transport truck loading or unloading points and operations.

(a) The track of tank car siding shall be relatively level.

(b) A "tank car connected" sign, as covered by DOT rules, shall be installed at the active end or ends of the siding while the tank car is connected.

(c) While cars are on side track for loading or unloading, the wheels at both ends shall be blocked on the rails.

(d) The employer shall insure that an employee is in attendance at all times while the tank car, cars, or trucks are being loaded or unloaded.

(e) A backflow check valve, excess-flow valve, or a shutoff valve with means of remote closing, to protect against uncontrolled discharge of LP-gas from storage tank piping shall be installed close to the point where the liquid piping and hose or swing joint pipe is connected.

(f) Where practical, the distance of the unloading or loading point shall conform to the distances in subsection (6)(b) of this section.

(16) Instructions. Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such function.

(17) Electrical equipment and other sources of ignition.

(a) Electrical equipment and wiring shall be of a type specified by and shall be installed according to chapter 296-24 WAC Part L, for ordinary locations except that fixed electrical equipment in classified areas shall comply with subsection (18) of this section.

(b) Open flames or other sources of ignition shall not be permitted in vaporizer rooms (except those housing direct-fired vaporizers), pumphouses, container charging rooms or other similar locations. Direct-fired vaporizers shall not be permitted in pumphouses or container charging rooms.

Note: Liquefied petroleum gas storage containers do not require lightning protection. Since liquefied petroleum gas is contained in a closed system of piping and equipment, the system need not be electrically conductive or electrically bonded for protection against static electricity (see NFPA No. 77-1972-1973, Recommended Practice for Static Electricity).

(c) Open flames (except as provided for in (b) of this subsection), cutting or welding, portable electric tools, and extension lights capable of igniting LP-gas, shall not be permitted within classified areas specified in Table H-28 of this section unless the LP-gas facilities have been freed of all liquid and vapor, or special precautions observed under carefully controlled conditions.

(18) Fixed electrical equipment in classified areas. Fixed electrical equipment and wiring installed within classified areas shall comply with Table H-28 of this section and shall be installed according to chapter 296-24 WAC Part L. This provision does not apply to fixed electrical equipment at residential or commercial installations of LP-gas systems or to systems covered by WAC 296-24-47511.

(19) Liquid-level gaging device.

(a) Each container manufactured after December 31, 1965, and filled on a volumetric basis shall be equipped with a fixed liquid-level gage to indicate the maximum permitted filling level as provided in (e) of this subsection. Each container manufactured after December 31, 1969, shall have permanently attached to the container adjacent to the fixed level gage a marking showing the percentage full that will be shown by that gage. When a variable liquid-level gage is also provided, the fixed liquid-level gage will also serve as a means for checking the variable gage. These gages shall be used in charging containers as required in subsection (12) of this section.

(b) All variable gaging devices shall be arranged so that the maximum liquid level for butane, for a fifty-fifty mixture of butane and propane, and for propane, to which the container may be charged is readily determinable. The markings indicating the various liquid levels from empty to full shall be on the system nameplate or gaging device or part may be on the system nameplate and part on the gaging device. Dials of magnetic or rotary gages shall show whether they are for cylindrical or spherical containers and whether for above-ground or underground service. The dials of gages intended for use only on aboveground containers of over one thousand two hundred gallons water capacity shall be so marked.

(c) Gaging devices that require bleeding of the product to the atmosphere, such as the rotary tube, fixed tube, and slip tube, shall be designed so that the bleed valve maximum opening is not larger than a No. 54 drill size, unless provided with excess flow valve.

(d) Gaging devices shall have a design working pressure of at least 250 p.s.i.g.

(e) Length of tube or position of fixed liquid-level gage shall be designed to indicate the maximum level to which the container may be filled for the product contained. This level shall be based on the volume of the product at 40°F at its maximum permitted filling density for aboveground containers and at 50°F for underground containers. The employer shall calculate the filling point for which the fixed liquid level gage shall be designed according to the method in this subsection.

TABLE H-28

Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class 1, Group D ²
A	Storage containers other than DOT cylinders.	Within 15 feet in all directions from connections, except connections otherwise covered in Table H-28.	Division 2.
B	Tank vehicle and tank car loading and unloading. ³	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.

Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class 1, Group D ²
		Beyond 5 feet but within 15 feet in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and grade. (See Figure H-1.)	Division 2.
C	Gage vent openings other than those on DOT cylinders.	Within 5 feet in all directions from point of discharge. Beyond 5 feet but within 15 feet in all directions from point of discharge.	Division 1. Division 2.
D	Relief valve discharge other than those on DOT cylinders.	Within direct path of discharge. Within 5 feet in all directions from point of discharge. Beyond 5 feet but within 15 feet in all directions from point of discharge except within the direct path of discharge.	Division 1. NOTE—Fixed electrical equipment should preferably not be installed. Division 1. Division 2.
E	Pumps, compressors, gas-air mixers and vaporizers other than direct fired. Indoors without ventilation	Entire room and any adjacent room not separated by a gastight partition.	Division 1.
		Within 15 feet of the exterior side of any exterior wall or roof that is not vaportight or within 15 feet of any exterior opening.	Division 2.
	Indoors with adequate ventilation. ⁴	Entire room and any adjacent room not separated by a gastight partition.	Division 2.
	Outdoors in open air at or above-grade.	Within 15 feet in all directions from this equipment and within the cylindrical volume between the horizontal equator of the sphere and grade. See Figure H-1.	Division 2.

Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class I, Group D ²	Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class I, Group D ²
F	Service station dispensing units.	Entire space within dispenser enclosure, and 18 inches horizontally from enclosure exterior up to an elevation 4 ft. above dispenser base. Entire pit or open space beneath dispenser. Up to 18 inches abovegrade within 20 ft. horizontally from any edge of enclosure. NOTE: For pits within this area, see Part F of this table.	Division 1. Division 2.		Outdoors in open air	Within 5 feet in all directions from connections regularly made or disconnected for product transfer. Beyond 5 feet but within 15 feet in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and grade (See Fig. H-1.)	Division 1. Division 2.
G	Pits or trenches containing or located beneath LP-gas valves, pumps, compressors, regulators, and similar equipment.						
	Without mechanical ventilation.	Entire pit or trench	Division 1.				
		Entire room and any adjacent room not separated by a gastight partition.	Division 2.				
		Within 15 feet in all directions from pit or trench when located outdoors.	Division 2.				
	With adequate mechanical ventilation.	Entire pit or trench	Division 2				
		Entire room and any adjacent room not separated by a gastight partition.	Division 2.				
		Within 15 feet in all directions from pit or trench when located outdoors.	Division 2.				
H	Special buildings or rooms for storage of portable containers.	Entire room	Division 2.				
I	Pipelines and connections containing operational bleeds, drips, vents or drains.	Within 5 ft. in all directions from point of discharge.	Division 1.				
		Beyond 5 ft. from point of discharge, same as Part E of this table.					
J	Container filling: Indoors without ventilation. Indoors with adequate ventilation. ⁴	Entire room Within 5 feet in all directions from connections regularly made or disconnected for product transfer. Beyond 5 feet and entire room	Division 1. Division 1. Division 2.				

¹The classified area shall not extend beyond an unpierced wall, roof, or solid vaportight partition.

²See chapter 296-46 WAC, and chapter 296-24 WAC Part L.

³When classifying extent of hazardous area, consideration shall be given to possible variations in the spotting of tank cars and tank vehicles at the unloading points and the effect these variations of actual spotting point may have on the point of connection.

⁴Ventilation, either natural or mechanical, is considered adequate when the concentration of the gas in a gas-air mixture does not exceed twenty-five percent of the lower flammable limit under normal operating conditions.

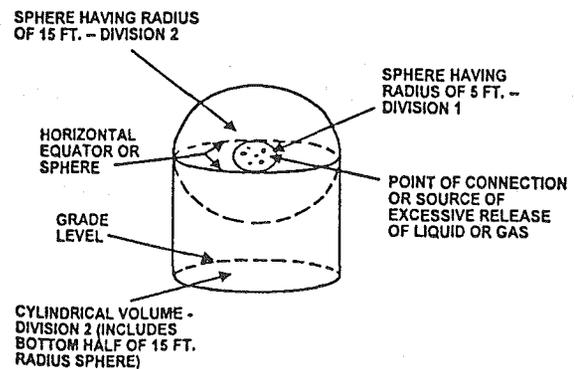


Figure H-1

Note: It is impossible to set out in a table the length of a fixed dip tube for various capacity tanks because of the varying tank diameters and lengths and because the tank may be installed either in a vertical or horizontal position. Knowing the maximum permitted filling volume in gallons, however, the length of the fixed tube can be determined by the use of a strapping table obtained from the container manufacturer. The length of the fixed tube should be such that when its lower end touches the surface of the liquid in the container, the contents of the container will be the maximum permitted volume as determined by the following formula:

$$\frac{\text{Water capacity (gals.) of container* x filling density**}}{\text{Specific gravity of LP-gas* x volume correction factor*** x 100}} = \text{Maximum volume of LP-gas}$$

* Measure at 60°F.

** From subsection (12)(a) of this section "filling densities."

*** For aboveground containers the liquid temperature is assumed to be 40°F and for underground containers the liquid temperature is assumed to be 50°F. To correct the liquid volumes at these temperatures to 60°F the following factors shall be used.

(i) Formula for determining maximum volume of liquefied petroleum gas for which a fixed length of dip tube shall be set:

TABLE H-29
VOLUME CORRECTION FACTORS

Specific gravity	Aboveground	Underground
0.500	1.033	1.017
.510	1.031	1.016
.520	1.029	1.015
.530	1.028	1.014
.540	1.026	1.013
.550	1.025	1.013
.560	1.024	1.012
.570	1.023	1.011
.580	1.021	1.011
.590	1.020	1.010

(ii) The maximum volume of LP-gas which can be placed in a container when determining the length of the dip tube expressed as a percentage of total water content of the container is calculated by the following formula.

(iii) The maximum weight of LP-gas which may be placed in a container for determining the length of a fixed dip tube is determined by multiplying the maximum volume of liquefied petroleum gas obtained by the formula in (e)(i) of this subsection by the pounds of liquefied petroleum gas in a gallon at 40°F for aboveground and at 50°F for underground containers. For example, typical pounds per gallon are specified below:

Example: Assume a one hundred-gallon total water capacity tank for aboveground storage of propane having a specific gravity of 0.510 of 60°F.

$$\frac{100 \text{ (gals.)} \times 42 \text{ (filling density from (12)(a) of this subsection)}}{0.510 \times 1.031 \text{ (correction factor from Table H-29)} \times 100} = \frac{4200}{52.6}$$

4200
52.6 = 79.8 gallons propane, the maximum amount permitted to be placed in a 100-gallon total water capacity aboveground container equipped with a fixed dip tube.

$$\frac{\text{Maximum volume of LP-gas (from formula in (e)(i) of this subsection) x 100}}{\text{Total water content of container in gallons.}} = \text{Maximum percent of LP-gas}$$

	Aboveground, pounds per gallon	Underground, pounds per gallon
Propane.....	4.37	4.31
N Butane.....	4.97	4.92

(f) Fixed liquid-level gages used on containers other than DOT containers shall be stamped on the exterior of the gage with the letters "DT" followed by the vertical distance (expressed in inches and carried out to one decimal place) from the top of container to the end of the dip tube or to the centerline of the gage when it is located at the maximum permitted filling level. For portable containers that may be filled in the horizontal and/or vertical position the letters "DT" shall be followed by "V" with the vertical distance from the top of the container to the end of the dip tube for vertical filling and with "H" followed by the proper distance for horizontal filling. For DOT containers the stamping shall be placed both on the exterior of the gage and on the container. On aboveground or cargo containers where the gages are positioned at specific levels, the marking may be specified in percent of total tank contents and the marking shall be stamped on the container.

(g) Gage glasses of the columnar type shall be restricted to charging plants where the fuel is withdrawn in the liquid phase only. They shall be equipped with valves having metallic handwheels, with excess flow valves, and with extra-heavy glass adequately protected with a metal housing applied by the gage manufacturer. They shall be shielded against the direct rays of the sun. Gage glasses of the columnar type are prohibited on tank trucks, and on motor fuel tanks, and on containers used in domestic, commercial, and industrial installations.

(h) Gaging devices of the float, or equivalent type which do not require flow for their operation and having connections extending to a point outside the container do not have to be equipped with excess flow valves provided the piping and fittings are adequately designed to withstand the container pressure and are properly protected against physical damage and breakage.

(20) Requirements for appliances.

(a) Except as provided in (b) of this subsection, new commercial and industrial gas consuming appliances shall be approved.

(b) Any appliance that was originally manufactured for operation with a gaseous fuel other than LP-gas and is in good condition may be used with LP-gas only after it is properly converted, adapted, and tested for performance with LP-gas before the appliance is placed in use.

(c) Unattended heaters used inside buildings for the purpose of animal or poultry production or care shall be equipped with an approved automatic device designed to shut off the flow of gas to the main burners, and pilot if used, in the event of flame extinguishment.

(d) All commercial, industrial, and agricultural appliances or equipment shall be installed in accordance with the requirements of these standards and in accordance with the following:

(i) Domestic and commercial appliances—NFPA 54-1969, Standard for the Installation of Gas Appliances and Gas Piping.

(ii) Industrial appliances—NFPA 54A-1969, Standard for the Installation of Gas Piping and Gas Equipment on Industrial Premises and Certain Other Premises.

(iii) Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines—NFPA 37-1970.

(iv) Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment, NFPA 96-1970.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-47505, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-47505, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-47505, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-47505, filed 4/19/85; Order 76-6, § 296-24-47505, filed 3/1/76; Order 73-5, § 296-24-47505, filed 5/9/73 and Order 73-4, § 296-24-47505, filed 5/7/73.]

WAC 296-24-47507 Cylinder systems. (1) Application. This section applies specifically to systems utilizing containers constructed in accordance with DOT specifications. All requirements of WAC 296-24-47505 apply to this section unless otherwise noted in WAC 296-24-47505.

(2) Marking of containers. Containers shall be marked in accordance with DOT regulations. Additional markings not in conflict with DOT regulations may be used.

(3) Description of a system. A system shall include the container base or bracket, containers, container valves, connectors, manifold valve assembly, regulators, and relief valves.

(4) Containers and regulating equipment installed outside of buildings or structures.

(a) Containers shall not be buried below ground. However, this shall not prohibit the installation in a compartment or recess below grade level, such as a niche in a slope or terrace wall which is used for no other purpose, providing that the container and regulating equipment are not in contact with the ground and the compartment or recess is drained and ventilated horizontally to the outside air from its lowest level, with the outlet at least three feet away from any building opening which is below the level of such outlet.

Except as provided in WAC 296-24-47505 (10)(n), the discharge from safety relief devices shall be located not less than three feet horizontally away from any building opening which is below the level of such discharge and shall not terminate beneath any building unless such space is well ventilated to the outside and is not enclosed on more than two sides.

(b) Containers shall be set upon firm foundation or otherwise firmly secured; the possible effect on the outlet piping of settling shall be guarded against by a flexible connection or special fitting.

(5) Containers and equipment used inside of buildings or structures.

(a) When operational requirements make portable use of containers necessary and their location outside of buildings or structures is impracticable, containers and equipment are permitted to be used inside of buildings or structures in accordance with (a)(i) through (xii) of this subsection, and, in addition, such other provisions of this section as are applicable to the particular use or occupancy.

(i) Containers in use shall mean connected for use.

(ii) Systems utilizing containers having a water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) shall be equipped with excess flow valves. Such excess flow valves shall be either integral with the container valves or in the connections to the container valve outlets. In either case, an excess flow valve shall be installed in such a manner that any undue strain beyond the excess flow valve will not cause breakage between the container and the excess flow valve. The installation of excess flow valves shall take into account the type of valve protection provided.

(iii) Regulators, if used, shall be either directly connected to the container valves or to manifolds connected to the container valves. The regulator shall be suitable for use with LP-gas. Manifolds and fittings connecting containers to pressure regulator inlets shall be designed for at least 250 p.s.i.g. service pressure.

(iv) Valves on containers having a water capacity greater than fifty pounds (nominal twenty pounds LP-gas capacity) shall be protected while in use.

(v) Containers shall be marked in accordance with WAC 296-24-47505 (5)(c) and subsection (2) of this section.

(vi) Pipe or tubing shall conform to WAC 296-24-47505(8) except that aluminum pipe or tubing shall not be used.

(vii) Hose shall be designed for a working pressure of at least 250 p.s.i.g. Hose and hose connections shall have their correctness as to design, construction and performance determined by listing by a nationally recognized testing laboratory.

(A) The hose length may exceed the length specified in WAC 296-24-47505 (9)(g)(ii), but shall be as short as practicable. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(B) Hose shall be long enough to permit compliance with spacing provisions of this section without kinking or straining or causing hose to be so close to a burner as to be damaged by heat.

(viii) Portable heaters, including salamanders, shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame extinguishment. Such heaters having inputs above 50,000 B.t.u. manufactured on or after May 17, 1967, and such heaters having inputs above 100,000 B.t.u. manufactured before May 17, 1967, shall be equipped with either:

(A) A pilot which must be lighted and proved before the main burner can be turned on; or

(B) An electric ignition system. The provisions of (a)(viii) of this subsection do not apply to tar kettle burners, torches, melting pots, nor do they apply to portable heaters under 7,500 B.t.u.h. input when used with containers having a maximum water capacity of two and one-half pounds. Con-

tainer valves, connectors, regulators, manifolds, piping, and tubing shall not be used as structural supports for heaters.

(ix) Containers, regulating equipment, manifolds, pipe, tubing, and hose shall be located so as to minimize exposure to abnormally high temperatures (such as may result from exposure to convection or radiation from heating equipment or installation in confined spaces), physical damage, or tampering by unauthorized persons.

(x) Heat producing equipment shall be located and used so as to minimize the possibility of ignition of combustibles.

(xi) Containers having water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) connected for use, shall stand on a firm and substantially level surface and, when necessary, shall be secured in an upright position.

(xii) Containers, including the valve protective devices, shall be installed so as to minimize the probability of impingement of discharge of safety relief devices upon containers.

(b) Containers having a maximum water capacity of two and one-half pounds (nominal one pound LP-gas capacity) are permitted to be used inside of buildings as part of approved self-contained hand torch assemblies or similar appliances.

(c) Containers having a maximum water capacity of twelve pounds (nominal five pounds LP-gas capacity) are permitted to be used temporarily inside of buildings for public exhibition or demonstration purposes, including use for classroom demonstrations.

(d) When buildings frequented by the public are open to the public, containers are permitted to be used for repair or minor renovation as follows:

(i) The maximum water capacity of individual containers shall be fifty pounds (nominal twenty pounds LP-gas capacity).

(ii) The number of LP-gas containers shall not exceed the number of workers assigned to using the LP-gas.

(iii) Containers having a water capacity of greater than two and one-half pounds (nominal one pound LP-gas capacity)] shall not be left unattended in such buildings.

(e) When buildings frequented by the public are not open to the public, containers are permitted to be used for repair or minor renovations, as follows:

The provisions of (f) of this subsection shall apply except that containers having a water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) shall not be left unattended in such buildings.

(f) Containers are permitted to be used in buildings or structures under construction or undergoing major renovation when such buildings or structures are not occupied by the public, as follows:

(i) The maximum water capacity of individual containers shall be two hundred forty-five pounds (nominal one hundred pounds LP-gas capacity).

(ii) For temporary heating such as curing concrete, drying plaster and similar applications, heaters (other than integral heater-container units) shall be located at least six feet from any LP-gas container. This shall not prohibit the use of heaters specifically designed for attachment to the container or to a supporting standard, provided they are designed and

installed so as to prevent direct or radiant heat application from the heater onto the container. Blower and radiant type heater shall not be directed toward any LP-gas container within twenty feet.

(iii) If two or more heater-container units, of either the integral or nonintegral type, are located in an unpartitioned area on the same floor, the container or containers of each unit shall be separated from the container or containers of any other unit by at least twenty feet.

(iv) When heaters are connected to containers for use in an unpartitioned area on the same floor, the total water capacity of containers manifolded together for connection to a heater or heaters shall not be greater than seven hundred thirty-five pounds (nominal three hundred pounds LP-gas capacity). Such manifolds shall be separated by at least twenty feet.

(v) On floors on which heaters are not connected for use, containers are permitted to be manifolded together for connection to a heater or heaters on another floor, provided:

(A) The total water capacity of containers connected to any one manifold is not greater than two thousand four hundred fifty pounds (nominal one thousand pounds LP-gas capacity) and;

(B) Where more than one manifold having a total water capacity greater than seven hundred thirty-five pounds (nominal three hundred pounds LP-gas capacity) are located in the same unpartitioned area, they shall be separated by at least fifty feet.

(vi) Storage of containers awaiting use shall be in accordance with WAC 296-24-47513.

(g) Containers are permitted to be used in industrial occupancies for processing, research, or experimental purposes as follows:

(i) The maximum water capacity of individual containers shall be two hundred forty-five pounds (nominal one hundred pounds LP-gas capacity).

(ii) Containers connected to a manifold shall have a total water capacity not greater than seven hundred thirty-five pounds (nominal three hundred pounds LP-gas capacity) and not more than one such manifold may be located in the same room unless separated at least twenty feet from a similar unit.

(iii) The amount of LP-gas in containers for research and experimental use shall be limited to the smallest practical quantity.

(h) Containers are permitted to be used in industrial occupancies with essentially noncombustible contents where portable equipment for space heating is essential and where a permanent heating installation is not practical, as follows: Containers and heaters shall comply with and be used in accordance with (f) of this subsection.

(i) Containers are permitted to be used in buildings for temporary emergency heating purposes, if necessary to prevent damage to the buildings or contents, when the permanent heating system is temporarily out of service, as follows:

(i) Containers and heaters shall comply with and be used in accordance with (f) of this subsection.

(ii) The temporary heating equipment shall not be left unattended.

(j) Containers are permitted to be used temporarily in buildings for training purposes related in installation and use of LP-gas systems, as follows:

(i) The maximum water capacity of individual containers shall be two hundred forty-five pounds (nominal one hundred pounds LP-gas capacity), but the maximum quantity of LP-gas that may be placed in each container shall be twenty pounds.

(ii) If more than one such container is located in the same room, the containers shall be separated by at least twenty feet.

(iii) Containers shall be removed from the building when the training class has terminated.

(6) Container valves and accessories.

(a) Valves in the assembly of multiple container systems shall be arranged so that replacement of containers can be made without shutting off the flow of gas in the system.

Note: This provision is not to be construed as requiring an automatic changeover device.

(b) Regulators and low-pressure relief devices shall be rigidly attached to the cylinder valves, cylinders, supporting standards, the building walls or otherwise rigidly secured and shall be so installed or protected that the elements (sleet, snow, or ice) will not affect their operation.

(c) Valves and connections to the containers shall be protected while in transit, in storage, and while being moved into final utilization, as follows:

(i) By setting into the recess of the container to prevent the possibility of their being struck if the container is dropped upon a flat surface, or

(ii) By ventilated cap or collar, fastened to the container capable of withstanding a blow from any direction equivalent to that of a thirty-pound weight dropped four feet. Construction must be such that a blow will not be transmitted to the valve or other connection.

(d) When containers are not connected to the system, the outlet valves shall be kept tightly closed or plugged, even though containers are considered empty.

(e) Containers having a water capacity in excess of fifty pounds (approximately twenty-one pounds LP-gas capacity), recharged at the installation, shall be provided with excess flow or backflow check valves to prevent the discharge of container contents in case of failure of the filling or equalizing connection.

(7) Safety devices.

(a) Containers shall be provided with safety devices as required by DOT regulations.

(b) A final stage regulator of an LP-gas system (excluding any appliance regulator) shall be equipped on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

TABLE H-30

Regulatory delivery pressure	Relief valve start to discharge pressure setting (percent of regulator deliver pressure)	
	Minimum	Maximum
1 p.s.i.g. or less	200	300
Above 1 p.s.i.g. but not		

Regulatory delivery pressure	Relief valve start to discharge pressure setting (percent of regulator deliver pressure)	
	Minimum	Maximum
over 3 p.s.i.g.	140	200
Above 3 p.s.i.g.	125	200

(c) When a regulator or pressure relief valve is used inside a building for other than purposes specified in WAC 296-24-47505 (6)(a)(i) through (vi), the relief valve and the space above the regulator and relief valve diaphragms shall be vented to the outside air with the discharge outlet located not less than three feet horizontally away from any building opening which is below such discharge. These provisions do not apply to individual appliance regulators when protection is otherwise provided nor to subsection (5) of this section and WAC 296-24-47505 (10)(n). In buildings devoted exclusively to gas distribution purposes, the space above the diaphragm need not be vented to the outside.

(8) Reinstallation of containers. Containers shall not be reinstalled unless they are requalified in accordance with DOT regulations.

Permissible product. A product shall not be placed in a container marked with a service pressure less than four-fifths of the maximum vapor pressure of product at 130°F.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-47507, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-47507, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-47507, filed 11/14/88; Order 73-5, § 296-24-47507, filed 5/9/73 and Order 73-4, § 296-24-47507, filed 5/7/73.]

WAC 296-24-47511 Liquefied petroleum gas as a motor fuel. (1) Application.

(a) This section applies to internal combustion engines, fuel containers, and pertinent equipment for the use of liquefied petroleum gases as a motor fuel on easily movable, readily portable units including self-propelled vehicles.

(b) Fuel containers and pertinent equipment for internal combustion engines using liquefied petroleum gas where installation is of the stationary type are covered by WAC 296-24-47509. This section does not apply to containers for transportation of liquefied petroleum gases nor to marine fuel use. All requirements of WAC 296-24-47505 apply to this section, unless otherwise noted in WAC 296-24-47505.

(2) General.

(a) Fuel may be used from the cargo tank of a truck while in transit, but not from cargo tanks on trailers or semitrailers. The use of fuel from the cargo tanks to operate stationary engines is permitted providing wheels are securely blocked.

(b) Passenger-carrying vehicles shall not be fueled while passengers are on board.

(c) Industrial trucks (including lift trucks) equipped with permanently mounted fuel containers shall be charged outdoors. Charging equipment shall comply with the provisions of WAC 296-24-47517.

(d) LP-gas fueled industrial trucks shall comply with the Standard for Type Designations, Areas of Use, Maintenance

and Operation of Powered Industrial Trucks, NFPA 505-1969.

(e) Engines on vehicles shall be shut down while fueling if the fueling operation involves venting to the atmosphere.

(3) Design pressure and classification of fuel containers.

(a) Except as covered in (3)(b) and (c) of this section, containers shall be in accordance with Table H-32.

(b) Fuel containers for use in industrial trucks (including lift trucks) shall be either DOT containers authorized for LP-gas service having a minimum service pressure of 240 p.s.i.g or minimum Container Type 250. Under 1950 and later ASME Codes, this means a 312.5-p.s.i.g design pressure container.

TABLE H-32

Container type	For gases with vapor press. Not to exceed lb. per sq. in. gage at 100°F. (37.8°C.)	Minimum design pressure of container lb. per sq. in. gage	
		1949 and earlier editions of ASME Code (Par. U-68, U-69)	1949 edition of ASME Code (Par. U-200, 1U-201); 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of ASME Code; All editions of API-ASME Code ²
200 ¹	215	200	250

¹ Container type may be increased by increments of 25. The minimum design pressure of containers shall be 100% of the container type designation when constructed under 1949 or earlier editions of the ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125% of the container type designation when constructed under: (1) The 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of the ASME Code, and (3) all editions of the API-ASME Code.

² Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(c) Containers manufactured and maintained under DOT specifications and regulations may be used as fuel containers. When so used they shall conform to all requirements of this section.

(d) All container inlets and outlets except safety relief valves and gaging devices shall be labeled to designate whether they communicate with vapor or liquid space. (Labels may be on valves.)

(4) Installation of fuel containers.

(a) Containers shall be located in a place and in a manner to minimize the possibility of damage to the container. Containers located in the rear of trucks and buses, when protected by substantial bumpers, will be considered in conformance with this requirement. Fuel containers on passenger-carrying vehicles shall be installed as far from the engine as is practicable, and the passenger space and any space containing radio equipment shall be sealed from the container space to prevent direct seepage of gas to these spaces. The container compartment shall be vented to the outside. In case the fuel container is mounted near the engine or the exhaust system, the container shall be shielded against direct heat radiation.

(b) Containers shall be installed with as much clearance as practicable but never less than the minimum road clearance of the vehicle under maximum spring deflection. This

minimum clearance shall be to the bottom of the container or to the lowest fitting on the container or housing, whichever is lower.

(c) Permanent and removable fuel containers shall be securely mounted to prevent jarring loose, slipping, or rotating, and the fastenings shall be designed and constructed to withstand static loading in any direction equal to twice the weight of the tank and attachments when filled with fuel using a safety factor of not less than four based on the ultimate strength of the material to be used. Field welding, when necessary, shall be made only on saddle plates, lugs or brackets, originally attached to the container by the tank manufacturer.

(d) Fuel containers on buses shall be permanently installed.

(e) Containers from which vapor only is to be withdrawn shall be installed and equipped with suitable connections to minimize the accidental withdrawal of liquid.

(5) Valves and accessories.

(a) Container valves and accessories shall have a rated working pressure of at least 250 p.s.i.g., and shall be of a type suitable for liquefied petroleum gas service.

(b) The filling connection shall be fitted with an approved double back-pressure check valve, or a positive shutoff in conjunction with an internal back-pressure check valve. On a removable container the filler valve may be a hand operated shutoff valve with an internal excess flow valve. Main shutoff valves on the container on liquid and vapor must be readily accessible.

(c) With the exceptions of (5)(d)(iii) of this section, filling connections equipped with approved automatic back-pressure check valves, and safety relief valves, all connections to the containers having openings for the flow of gas in excess of a No. 54 drill size shall be equipped with approved automatic excess flow valves to prevent discharge of content in case connections are broken.

(d) Liquid-level gaging devices:

(i) Variable liquid-level gages which require the venting of fuel to the atmosphere shall not be used on fuel containers of industrial trucks (including lift trucks).

(ii) On portable containers that may be filled in the vertical and/or horizontal position, the fixed liquid-level gage shall indicate maximum permitted filling level for both vertical and horizontal filling with the container oriented to place the safety relief valve in communication with the vapor space.

(iii) In the case of containers used solely in farm tractor service and charged at a point at least 50 feet from any important building, the fixed liquid-level gaging device may be so constructed that the outward flow of container content exceeds that passed by a No. 54 drill size opening, but in no case shall the flow exceed that passed by a No. 31 drill-size opening. An excess flow valve is not required. Fittings equipped with such restricted drill size opening and container on which they are used shall be marked to indicate the size of the opening.

(iv) All valves and connections on containers shall be adequately protected to prevent damage due to accidental contact with stationary objects or from loose objects thrown up from the road, and all valves shall be safeguarded against

damage due to collision, overturning or other accident. For farm tractors where parts of the vehicle provide such protection to valves and fittings, the foregoing requirements shall be considered fulfilled. However, on removable type containers the protection for the fittings shall be permanently attached to the container.

(v) (Exchange of removable fuel containers preferably should be done outdoors but may be done indoors.) When removable fuel containers are used, means shall be provided in the fuel system to minimize the escape of fuel when the containers are exchanged. This shall be accomplished by one of the following methods:

(A) Using an approved automatic quick-closing coupling (a type closing in both directions when uncoupled) in the fuel line, or

(B) Closing the valve at the fuel container and allowing the engine to run until the fuel in the line is consumed.

(6) Piping—Including pipe, tubing, and fittings.

(a) Pipe from fuel container to first-stage regulator shall be not less than schedule 80 wrought iron or steel (black or galvanized), brass or copper; or seamless copper, brass, or steel tubing. Steel tubing shall have a minimum wall thickness of 0.049 inch. Steel pipe or tubing shall be adequately protected against exterior corrosion. Copper tubing shall be types K or L or equivalent having a minimum wall thickness of 0.032 inch. Approved flexible connections may be used between container and regulator or between regulator and gas-air mixer within the limits of approval. The use of aluminum pipe or tubing is prohibited. In the case of removable containers an approved flexible connection shall be used between the container and the fuel line.

(b) All piping shall be installed, braced, and supported so as to reduce to a minimum the possibility of vibration strains or wear.

(7) Safety devices.

(a) Spring-loaded internal type safety relief valves shall be used on all motor fuel containers.

(b) The discharge outlet from safety relief valves shall be located on the outside of enclosed spaces and as far as practicable from possible sources of ignition, and vented upward within 45 degrees of the vertical in such a manner as to prevent impingement of escaping gas upon containers, or parts of vehicles, or on vehicles in adjacent lines of traffic. A rain cap or other protector shall be used to keep water and dirt from collecting in the valve.

(c) When a discharge line from the container safety relief valve is used, the line shall be metallic, other than aluminum, and shall be sized, located, and maintained so as not to restrict the required flow of gas from the safety relief valve. Such discharge line shall be able to withstand the pressure resulting from the discharge of vapor when the safety relief valve is in the full open position. When flexibility is necessary, flexible metal hose or tubing shall be used.

(d) Portable containers equipped for volumetric filling may be filled in either the vertical or horizontal position only when oriented to place the safety relief valve in communication with the vapor space.

(e) WAC 296-24-47505 (10)(1) for hydrostatic relief valves shall apply.

(8) Vaporizers.

(a) Vaporizers and any part thereof and other devices that may be subjected to container pressure shall have a design pressure of at least 250 p.s.i.g.

(b) Each vaporizer shall have a valve or suitable plug which will permit substantially complete draining of the vaporizer. It shall be located at or near the lowest portion of the section occupied by the water or other heating medium.

(c) Vaporizers shall be securely fastened so as to minimize the possibility of becoming loosened.

(d) Each vaporizer shall be permanently marked at a visible point as follows:

(i) With the design pressure of the fuel-containing portion in p.s.i.g.

(ii) With the water capacity of the fuel-containing portion of the vaporizer in pounds.

(e) Devices to supply heat directly to a fuel container shall be equipped with an automatic device to cut off the supply of heat before the pressure inside the fuel container reaches 80 percent of the start to discharge pressure setting of the safety relief device on the fuel container.

(f) Engine exhaust gases may be used as a direct source of heat supply for the vaporization of fuel if the materials of construction of those parts of the vaporizer in contact with exhaust gases are resistant to the corrosive action of exhaust gases and the vaporizer system is designed to prevent excessive pressures.

(g) Vaporizers shall not be equipped with fusible plugs.

(9) Gas regulating and mixing equipment.

(a) Approved automatic pressure reducing equipment shall be installed in a secure manner between the fuel supply container and gas-air mixer for the purpose of reducing the pressure of the fuel delivered to the gas-air mixer.

(b) An approved automatic shutoff valve shall be provided in the fuel system at some point ahead of the inlet of the gas-air mixer, designed to prevent flow of fuel to the mixer when the ignition is off and the engine is not running. In the case of industrial trucks and engines operating in buildings other than those used exclusively to house engines, the automatic shutoff valve shall be designed to operate if the engine should stop. Atmospheric type regulators (zero governors) shall be considered adequate as an automatic shutoff valve only in cases of outdoor operation such as farm tractors, construction equipment, irrigation pump engines, and other outdoor stationary engine installations.

(c) The source of the air for combustion shall be completely isolated from the passenger compartment, ventilating system, or air-conditioning system.

(10) Stationary engines in buildings. Stationary engines and gas turbines installed in buildings, including portable engines used instead of or to supplement stationary engines, shall comply with the Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, NFPA 37-1970, and the appropriate provisions of WAC 296-24-47505 through 296-24-47509.

(11) Portable engines in buildings.

(a) Portable engines may be used in buildings only for emergency use, except as provided by (11) of this section.

(b) Exhaust gases shall be discharged to outside the building or to an area where they will not constitute a hazard.

(c) Provision shall be made to supply sufficient air for combustion and cooling.

(d) An approved automatic shutoff valve shall be provided in the fuel system ahead of the engine, designed to prevent flow of fuel to the engine when the ignition is off or if the engine should stop.

(e) The capacity of LP-gas containers used with such engines shall comply with the applicable occupancy provision of WAC 296-24-47507(5).

(12) Industrial trucks inside buildings.

(a) LP-gas-fueled industrial trucks are permitted to be used in buildings and structures.

(b) No more than two LP-gas containers shall be used on an industrial truck for motor fuel purposes.

(c) LP-gas-fueled industrial trucks are permitted to be used in buildings frequented by the public, when occupied by the public. The total water capacity of containers on each industrial truck shall not exceed 105 pounds (nominal 45 pounds LP-gas).

(d) Trucks shall not be left unattended in areas occupied by the public.

(e) Industrial trucks shall not be parked and left unattended in areas of possible excessive heat or sources of ignition.

(13) Garaging LP-gas-fueled vehicles.

(a) LP-gas-fueled vehicles may be stored or serviced inside garages provided there are no leaks in the fuel system and the fuel tanks are not filled beyond the maximum filling capacity specified in WAC 296-24-47505 (12)(a).

(b) LP-gas-fueled vehicles being repaired in garages shall have the container shutoff valve closed except when fuel is required for engine operation.

(c) Such vehicles shall not be parked near sources of heat, open flames, or similar sources of ignition or near open pits unless such pits are adequately ventilated.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-094, § 296-24-47511, filed 8/17/99, effective 12/1/99; Order 73-5, § 296-24-47511, filed 5/9/73 and Order 73-4, § 296-24-47511, filed 5/7/73.]

WAC 296-24-47515 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-24-51005 Definitions. The following definitions are applicable to all sections of this chapter which include WAC 296-24-510 in the section number and shall be construed to have the meanings below.

(1) "Approved" as used in these standards means:

(a) Listed by a recognized testing laboratory, or

(b) Recommended by the manufacturer as suitable for use with anhydrous ammonia and so marked, or

(c) Accepted by the authority having jurisdiction.

(2) "Appurtenance" refers to all devices such as pumps, compressors, safety relief devices, liquid-level gaging devices, valves and pressure gages.

(3) "Capacity" refers to the total volume of the container measured in U.S. gallons, unless otherwise specified.

(4) "Cylinder" means a container of 1000 pounds water capacity or less constructed in accordance with United States Department of Transportation Specifications.

(5) The "code" refers to the Unfired Pressure Vessel Code of the American Society of Mechanical Engineers (Section VIII of the ASME Boiler Construction Code), 1952, 1956, 1959, 1962, 1965, 1968 and 1971 editions, the joint code of the American Petroleum Institute and the American Society of Mechanical Engineers (API-ASME Code) 1951 edition, and subsequent amendments to or later editions of the same, as adopted.

(6) "Container" includes all vessels, tanks, cylinders or spheres used for transportation, storage or application of anhydrous ammonia.

(7) "Design pressure" is identical to the term "maximum allowable working pressure" used in the code.

(8) An "implement of husbandry" is a farm wagon-type tank vehicle of not over 3000 gallons capacity, used as a field storage "nurse tank" supplying the fertilizer to a field applicator and moved on highways only for bringing the fertilizer from a local source of supply to farms or fields or from one farm or field to another.

(9) "Filling density" means the per cent ratio of the weight of the gas in a container to the weight of water at 60°F that the container will hold. One lb. H₂O = 27.737 cu. in. at 60°F. For determining the weight capacity of the tank in pounds, the weight of a gallon (231 cubic inches) of water at 60°F in air shall be 8.32828 pounds.

(10) "Gas" refers to anhydrous ammonia in either the gaseous or liquefied state.

(11) "Gas mask" refers to gas masks approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).

(12) "DOT regulations" refer to hazardous materials regulations of the department of transportation (Title 49—Transportation, Code of Federal Regulations, Parts 171 to 190), including Specifications for Shipping Containers.

(13) "Systems" as used in these standards refers to an assembly of equipment consisting essentially of the container or containers, appurtenances, pumps, compressors, and interconnecting piping.

(14) The abbreviations "psig" and "psia" refer to pounds per square inch gage and pounds per square inch absolute, respectively.

(15) The terms "charging" and "filling" are used interchangeably and have the same meaning.

(16) "Trailer" as used in these standards refers to every vehicle designed for carrying property and for being drawn by a motor vehicle and so constructed that no part of its weight except the towing device rests upon the towing vehicle.

(17) "Tank motor vehicle" means any motor vehicle designed or used for the transportation of anhydrous ammonia in any tank designed to be permanently attached to any motor vehicle or any container not permanently attached to any motor vehicle which by reason of its size, construction or attachment to any motor vehicle must be loaded and/or unloaded without being removed from the motor vehicle.

(18) "Semitrailer" refers to every vehicle designed for carrying property and for being drawn by a motor vehicle and so constructed that some part of its weight and that of its load rests upon or is carried by another vehicle.

(19) "Safety relief valve" refers to an automatic spring loaded or equivalent type pressure activated device for gas or vapor service characterized by pop action upon opening, sometimes referred to as a pop valve. (Refer to American National Standards Institute, Terminology for Pressure Relief Devices, B95.1.)

(20) "Hydrostatic relief valve" refers to an automatic pressure activated valve for liquid service characterized by throttle or slow weep opening (nonpop action). (Refer to American National Standards Institute, Terminology for Pressure Relief Devices, B95.1.)

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-24-51005, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW, 94-15-096 (Order 94-07), § 296-24-51005, filed 7/20/94, effective 9/20/94; Order 74-27, § 296-24-51005, filed 5/7/74; Order 73-5, § 296-24-51005, filed 5/9/73 and Order 73-4, § 296-24-51005, filed 5/7/73.]

WAC 296-24-51009 Basic rules. This section applies to all sections of this chapter which include WAC 296-24-510 in the section number unless otherwise noted.

(1) Approval of equipment and systems. Each appearance shall be approved in accordance with (a), (b), (c), and (d) of this subsection.

(a) It was installed before February 8, 1973 and was approved and tested, and installed in accordance with either the provisions of the American National Standard for the Storage and Handling of Anhydrous Ammonia, K61.1, or the Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia, M-1, in effect at the time of installation; or

(b) It is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory; or

(c) It is a type which no nationally recognized testing laboratory does, or will undertake to accept, certify, list, label, or determine to be safe; and such equipment is inspected or tested by any federal, state, municipal, or other local authority responsible for enforcing occupational safety provisions of a federal, state, municipal or other local law, code, or regulation pertaining to the storage, handling, transport, and use of anhydrous ammonia, and found to be in compliance with either the provisions of the American National Standard for the Storage and Handling of Anhydrous Ammonia, K61.1, or the Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia, M-1, in effect at the time of installation; or

(d) It is a custom-designed and custom-built unit, which no nationally recognized testing laboratory, or federal, state, municipal or local authority responsible for the enforcement of a federal, state, municipal, or local law, code or regulation pertaining to the storage, transportation and use of anhydrous ammonia is willing to undertake to accept, certify, list, label or determine to be safe, and the employer has on file a document attesting to its safe condition following the conduct of appropriate tests. The document shall be signed by a registered professional engineer or other person having special training or experience sufficient to permit him/her to form an opinion as to safety of the unit involved. The document shall set forth the test bases, test data and results, and also the qualifications of the certifying person.

(e) For the purposes of this section the word "listed" means that equipment is of a kind mentioned in a list which is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment, and states such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner. "Labeled" means there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which makes periodic inspections of the production of such equipment, and whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner. "Certified" means it has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner, or is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and it bears a label, tag, or other record of certification.

(f) For purposes of this section, refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(2) Requirements for construction, original test and requalification of not-refrigerated containers.

(a) Containers used with systems covered in WAC 296-24-51011 and 296-24-51017 through 296-24-51021 shall be constructed and tested in accordance with the code except that construction under Table UW - 12 at a basic joint efficiency of under eighty percent is not authorized.

Containers built according to the code do not have to comply with paragraphs UG-125 to UG-128, inclusive, and paragraphs UG-132 and UG-133 of the code.

(b) Containers exceeding thirty-six inches in diameter or two hundred fifty gallons water capacity shall be constructed to comply with one or more of the following:

(i) Containers shall be stress relieved after fabrication in accordance with the code, or

(ii) Cold-formed heads, when used, shall be stress relieved, or

(iii) Hot-formed heads shall be used.

(c) Welding to the shell, head, or any other part of the container subject to internal pressure shall be done in compliance with WAC 296-24-51005(5). Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the container manufacturer.

(d) Containers used with systems covered by subsection (3)(b)(iv) of this section shall be constructed and tested in accordance with the DOT specifications.

(e) The provisions of (a) of this subsection shall not be construed as prohibiting the continued use or reinstallation of containers constructed and maintained in accordance with the 1949, 1950, 1952, 1956, 1959, 1962, 1965 and 1968 editions of the Unfired Pressure Vessel Code of the ASME or any revisions thereof in effect at the time of fabrication.

(3) Markings on nonrefrigerated containers and systems other than DOT containers.

(a) System nameplates, when required, shall be permanently attached to the system so as to be readily accessible for inspection and shall include markings as prescribed in (b) of this subsection.

(b) Each container or system covered in WAC 296-24-51011, 296-24-51017, 296-24-51019 and 296-24-51021 shall be marked as specified in the following:

(i) With a marking identifying compliance with the rules of the code under which the container is constructed.

(ii) With a notation on the container and system nameplate when the system is designed for underground installation.

(iii) With the name and address of the supplier of the container or the trade name of the container and with the date of fabrication.

(iv) With the water capacity of the container in pounds at 60°F or gallons, United States standard.

(v) With the design pressure in pounds per square inch gage.

(vi) With the wall thickness of the shell and heads.

(vii) With marking indicating the maximum level to which the container may be filled with liquid anhydrous ammonia at temperatures between 20°F and 100°F except on containers provided with fixed maximum level indicators, such as fixed length dip tubes, or containers that are filled by weight. Markings shall be in increments of not more than 20°F.

(viii) With the outside surface area in square feet.

(ix) With minimum temperature in Fahrenheit for which the container is designed.

(x) Marking specified on container shall be on the container itself or on a nameplate permanently affixed thereto.

(c) All main operating valves on permanently installed containers having a capacity of over three thousand water gallons shall be identified to show whether the valve is in liquid or vapor service. The recommended method of identification may be legend or color code as specified in (c)(i) and (ii) of this subsection:

(i) Legend: The legend **liquid** (or **liquid valve**), **vapor** (or **vapor valve**), as appropriate, shall be placed on or within twelve inches of the valve by means of a stencil tag, or decal.

(ii) Color code: Liquid valves shall be painted orange and vapor valves shall be painted yellow. The legend **orange-liquid**, **yellow-vapor** shall be displayed in one or more conspicuous places at each permanent storage location. The legend shall have letters at least two inches high and shall be placed against a contrasting background. This is in accordance with American National Standard A13.1 "Schemes for Identification of Piping Systems"—1956, Page 5.

(4) Marking refrigerated containers. (See WAC 296-24-51013(3). Marking refrigerated containers.)

(5) Location of containers.

(a) Consideration shall be given to the physiological effects of ammonia as well as to adjacent fire hazards in selecting the location for a storage container. Containers shall be located outside of buildings or in buildings or sections thereof especially approved for this purpose.

(b) Containers shall be located at least fifty feet from a dug well or other sources of potable water supply, unless the container is a part of a water treatment installation.

(c) The location of permanent storage containers shall be outside densely populated areas.

(d) Container locations shall comply with the following table:

Nominal Capacity of Container	Minimum Distances (feet) from Container to:		
	Line of Adjoining Property Which may be Built upon, Highways & Mainline of Railroad	Place of Public Assembly	Institution Occupancy
Over 500 to 2,000	25	150	250
Over 2,000 to 30,000	50	300	500
Over 30,000 to 100,000	50	450	750
Over 100,000	50	600	1,000

(e) Storage areas shall be kept free of readily ignitable materials such as waste, weeds and long dry grass.

(6) Container appurtenances.

(a) All appurtenances shall be designed for not less than the maximum working pressure of that portion of the system on which they are installed. All appurtenances shall be fabricated from materials proved suitable for anhydrous ammonia service.

(b) All connections to containers except safety relief devices, gaging devices, or those fitted with a No. 54 drill size orifice shall have shutoff valves located as close to the container as practicable.

(c) Excess flow valves where required by these standards shall close automatically at the rated flows of vapor or liquid as specified by the manufacturer. The connections and line including valves and fittings being protected by an excess flow valve shall have a greater capacity than the rated flow of the excess flow valve.

(d) Liquid level gaging devices that require bleeding of the product to the atmosphere and which are so constructed that outward flow will not exceed that passed by a No. 54 drill size opening need not be equipped with excess flow valves.

(e) Openings from container or through fittings attached directly on container to which pressure gage connections are made need not be equipped with excess flow valves if such openings are not larger than No. 54 drill size.

(f) Excess flow and back pressure check valves where required by these standards shall be located inside of the container or at a point outside as close as practicable to where the line enters the container. In the latter case, installation shall be made in such manner that any undue stress beyond the excess flow or back pressure check valve will not cause breakage between the container and the valve.

(g) Excess flow valves shall be designed with a bypass, not to exceed a No. 60 drill size opening to allow equalization of pressures.

(h) Shutoff valves provided with an excess flow valve shall be designed for proper installation in a container connection so that the excess flow valve will close should the shutoff valve break.

(i) All excess flow valves shall be plainly and permanently marked with the name or trademark of the manufacturer, the catalog number, and the rated capacity.

(7) Piping, tubing and fittings.

(a) All piping, tubing and fittings shall be made of material suitable for anhydrous ammonia service.

(b) All piping, tubing and fittings shall be designed for a pressure not less than the maximum pressure to which they may be subjected in service.

(c) All piping shall be well supported and provision shall be made for expansion and contraction. All refrigeration system piping shall conform to the Refrigeration Piping Code (ANSI B31.5 1966 addenda B31.1a-1968), a section of the American Standard Code for Pressure Piping, as it applies to ammonia.

(d) Piping used on nonrefrigerated systems shall be at least ASTM A-53-1969 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal. Such pipe shall be at least Schedule 40 when joints are welded, or welded and flanged. Such pipe shall be at least Schedule 80 when joints are threaded. Brass, copper, or galvanized steel pipe or tubing shall not be used.

(e) All metal flexible connections for permanent installations shall have a minimum working pressure of 250 p.s.i.g. (safety factor of 4). For temporary installations, hose meeting the requirement of subsection (8) of this section may be used.

(f) Cast iron fittings shall not be used but this shall not prohibit the use of fittings made specially for ammonia service of malleable or nodular iron such as Specification ASTM A47 or ASTM A395.

(g) Provisions shall be made for expansion, contraction, jarring, vibration, and for settling.

(h) Adequate provisions shall be made to protect all exposed piping from physical damage that might result from moving machinery, the presence of automobiles or trucks, or any other undue strain that may be placed upon the piping.

(i) Joint compounds shall be resistant to ammonia.

(j) After assembly, all piping and tubing shall be tested and proved to be free from leaks at a pressure not less than the normal operating pressure of the system.

(8) Hose specification.

(a) Hose used in ammonia service and subject to container pressure shall conform to the joint Rubber Manufacturers Association and the Fertilizer Institute "Hose Specifications for Anhydrous Ammonia" (see Appendix B).

(b) Hose subject to container pressure shall be designed for a minimum working pressure of 350 p.s.i.g. and a minimum burst pressure of 1750 p.s.i.g. Hose assemblies, when made up, shall be capable of withstanding a test pressure of 500 p.s.i.g.

(c) Hose and hose connections located on the low pressure side of flow control or pressure reducing valves on devices discharging to atmospheric pressure shall be designed for the maximum low side working pressure. All connections shall be designed, constructed, and installed so that there will be no leakage when connected.

(d) Where liquid transfer hose is not drained of liquid upon completion of transfer operations, such hose shall be equipped with an approved shutoff valve at the discharge end. Provision shall be made to prevent excessive hydrostatic pressure in the hose. (See subsection (9)(j) of this section.)

(e) On all hose one-half inch O.D. and larger, used for the transfer of anhydrous ammonia liquid or vapor, there shall be etched, cast, or impressed at five-foot intervals the following information:

"Anhydrous Ammonia"
xxx p.s.i.g. (Maximum working pressure)
Manufacturer's Name or Trademark
Year of Manufacture

(9) Safety relief devices.

(a) Every container used in systems covered by WAC 296-24-51011, 296-24-51017, 296-24-51019 and 296-24-51021 shall be provided with one or more safety relief valves of the spring-loaded or equivalent type. The discharge from safety relief valves shall be vented away from the container, upward and unobstructed to the atmosphere. All safety relief valve discharge openings shall have suitable raincaps that will allow free discharge of the vapor and prevent the entrance of water. Provision shall be made for draining condensate which may accumulate. The rate of the discharge shall be in accordance with the provisions of Appendix A.

(b) Container safety relief valves shall be set to start-to-discharge as follows, with relations to the design pressure of the container.

Containers	Minimum	Maximum*
ASME U-68, U-69	110%	125%
ASME U-200, U-201	95%	100%
ASME 1952, 1956, 1959, 1962, 1965, 1968 or 1971	95%	100%
API-ASME	95%	100%
U.S. Coast Guard (As required by USCG regulations)		
DOT (As required by DOT regulations)		

*Note: A relief valve manufacturer's tolerance of plus ten percent is permitted.

(c) Safety relief devices used in systems covered by WAC 296-24-51011, 296-24-51017, 296-24-51019 and 296-24-51021 shall be constructed to discharge at not less than the rates required in (a) of this subsection before the pressure is in excess of one hundred twenty percent (not including the ten percent tolerance referred to in (b) of this subsection) of the maximum permitted start-to-discharge pressure setting of the device.

(d) Safety relief valves shall be so arranged that the possibility of tampering will be minimized. If the pressure setting adjustment is external, the relief valves shall be provided with means for sealing the adjustment.

(e) Shutoff valves shall not be installed between the safety relief valves and the containers or systems described in WAC 296-24-51011, 296-24-51017, 296-24-51019 and 296-24-51021, except that a shutoff valve may be used where the arrangement of this valve is such as always to afford required capacity flow through the relief valves.

Note: The above exception is made to cover such cases as a three-way valve installed under two safety relief valves, each of which has the required rate of discharge and is so installed as to allow either of the safety relief valves to be closed off, but does not allow both safety valves to be closed off at the same time. Another exception to this may be where two separate relief valves are installed with individual shutoff valves. In this case, the two shutoff valve stems shall be mechanically interconnected in a manner which will allow full required flow of one safety relief valve at all times. Still another exception is a safety relief valve manifold which allows one valve of two, three, four or more to be closed off and the remaining valve or valves will provide

not less than the rate of discharge shown on the manifold nameplate.

(f) Safety relief valves shall have direct communication with the vapor space of the container.

(g) Each safety relief valve used with systems described in WAC 296-24-51011, 296-24-51017, 296-24-51019 and 296-24-51021 shall be plainly and permanently marked as follows:

(i) With the letters "AA" or the symbol "NH3."

(ii) The pressure in pounds per square inch gage (p.s.i.g.) at which the valve is set to start-to-discharge.

(iii) The rate of discharge of the valve in cubic feet per minute of air at 60°F and atmospheric pressure (14.7 p.s.i.a.).

(iv) The manufacturer's name and catalog number.

For example, a safety relief valve marked AA-250-4200 (air) would mean that this valve is suitable for use on an anhydrous ammonia container; that it is set to start-to-discharge at 250 p.s.i.g.; and that its rate of discharge (see subsection (8)(a) through (c) of this section) is four thousand two hundred cubic feet per minute of air.

(h) The flow capacity of the safety relief valve shall not be restricted by any connection to it on either the upstream or downstream side.

(i) The manufacturer or supplier of a safety relief valve manifold shall publish complete data showing the flow rating through the combined assembly of the manifold with safety relief valves installed. The manifold flow rating shall be determined by testing the manifold with all but one valve discharging. If one or more openings have restrictions not present in the remaining openings, the restricted opening or openings or those having the lowest flow shall be used to establish the flow rate marked on the manifold nameplate. The marking shall be similar to that required in (g) of this subsection for individual valves.

(j) A hydrostatic relief valve shall be installed between each pair of valves in the liquid ammonia piping or hose where liquid may be trapped so as to relieve into the atmosphere at a safe location.

(k) Discharge from safety relief devices shall not terminate in or beneath any building.

(10) Safety. See CGA Pamphlet G-2, TFI Operational Safety Manual M-2 and MCA Safety Data Sheet SD-8 (see Appendix C for availability).

(a) Personnel required to handle ammonia shall be trained in safe operating practices and the proper action to take in the event of emergencies. Personnel shall be instructed to use the equipment listed in (c) of this subsection in the event of an emergency. (Rev. 1-22-76)

(b) If a leak occurs in an ammonia system, the personnel trained for and designated to act in such emergencies shall:

(i) See that persons not required to deal with an emergency are evacuated from the contaminated area.

(ii) Put on a suitable gas mask.

(iii) Wear gauntlet type plastic or rubber gloves and wear plastic or rubber suits in heavily contaminated atmospheres.

(iv) Shut off the appropriate valves.

(c) All stationary storage installations shall have at least:

(i) Two suitable gas masks in readily accessible locations. Full face masks with ammonia canisters as certified by NIOSH under 42 CFR Part 84, are suitable for emergency

action for most leaks, particularly those that occur outdoors. For protection in concentrated ammonia atmospheres self-contained breathing apparatus is required.

(ii) One pair of protective gloves made of rubber or other material impervious to ammonia.

(iii) One pair of protective boots made of rubber or other material impervious to ammonia.

(iv) One protective slicker and/or protective pants and jacket made of rubber or other material impervious to ammonia.

(v) Easily accessible shower and/or at least fifty gallons of clean water in an open top container.

(vi) Tight fitting vented goggles or one full face shield.

(d) Where several persons are usually present, additional safety equipment may be desirable.

(e) Each tank motor vehicle transporting anhydrous ammonia, except farm applicator vehicles, shall carry a container of at least five gallons of water and shall be equipped with a full face gas mask, a pair of tight-fitting goggles or one full face shield. The driver shall be instructed in their use and the proper action to take to provide for his/her safety.

(f) If a leak occurs in transportation equipment and it is not practical to stop the leak, the driver should move the vehicle to an isolated location away from populated communities or heavily traveled highways.

(g) If liquid ammonia contacts the skin or eyes, the affected area should be promptly and thoroughly flushed with water. Do not use neutralizing solutions or ointments on affected areas. A physician shall treat all cases of eye exposure to liquid ammonia.

(11) Filling densities. (See WAC 296-24-51005(9).)

(a) The filling densities for nonrefrigerated containers shall not exceed the following:

	Aboveground	Underground
(i) Uninsulated	56%*	58%
(ii) Insulated	57%	
(iii) DOT containers shall be filled in accordance with DOT regulations.		

*This corresponds to 82% by volume at -28°F, 85% by volume at 5°F, 87.5% by volume at 30°F, and 90.6% by volume at 60°F.

(b) The filling density for refrigerated storage tanks temperature corresponding to the vapor pressure at the start-to-discharge pressure setting of the safety relief valve.

(c) If containers are to be filled according to liquid level by any gaging method other than a fixed length dip tube gage, each container should have a thermometer well so that the internal liquid temperature can be easily determined and the amount of liquid and vapor in the container corrected to a 60°F basis.

(12) Transfer of liquids.

(a) Anhydrous ammonia shall always be at a temperature suitable for the material of construction and design of the receiving containers. Ordinary steels are not suitable for refrigerated ammonia. See Appendix R of API Standard 620 "Recommended Rules for Design and Construction of Large Welded Low-Pressure Storage Tanks" for materials for low temperature service.

(b) At least one attendant shall supervise the transfer of liquids from the time the connections are first made until they are finally disconnected.

(c) Flammable gases or gases which will react with ammonia (such as air) shall not be used to unload tank cars or transport trucks.

(d) Containers shall be charged or used only upon authorization of the owner.

(e) Containers shall be gaged and charged only in the open atmosphere or in buildings approved for that purpose.

(f) Pumps used for transferring ammonia shall be recommended and labeled for ammonia service by the manufacturer.

(i) Pumps shall be designed for at least 250 p.s.i.g. working pressure.

(ii) Positive displacement pumps shall have installed, off the discharge port, a constant differential relief valve discharging into the suction port of the pump through a line of sufficient size to carry the full capacity of the pump at relief valve setting, which setting and installation shall be according to pump manufacturer's recommendations.

(iii) On the discharge side of the pump, before the relief valve line, there shall be installed a pressure gage graduated from 0 to 400 p.s.i.g.

(iv) Plant piping shall contain shutoff valves located as close as practical to pump connections.

(g) Compressors used for transferring or refrigerating ammonia shall be recommended and labeled for ammonia service by the manufacturer.

(i) Compressors, except those used for refrigeration, shall be designed for at least 250 p.s.i.g. working pressure. Crank cases of compressors not designed to withstand system pressure shall be protected with a suitable safety relief valve.

(ii) Plant piping shall contain shutoff valves located as close as practical to compressor connections.

(iii) A safety relief valve large enough to discharge the full capacity of the compressor shall be connected to the discharge before any shutoff valve.

(iv) Compressors shall have pressure gages at suction and discharge graduated to at least one and one-half times the maximum pressure that can be developed.

(v) Adequate means, such as drainable liquid trap, may be provided on the compressor suction to minimize the entry of liquid into the compressor.

(vi) Where necessary to prevent contamination, an oil separator shall be provided on the discharge side of the compressor.

(h) Loading and unloading systems shall be protected by suitable devices to prevent emptying of the storage container or the container being loaded or unloaded in the event of severance of the hose. Backflow check valves or properly sized excess flow valves shall be installed where necessary to provide such protection. In the event that such valves are not practical, remotely operated shutoff valves may be installed.

(i) Meters used for the measurement of liquid anhydrous ammonia shall be recommended and labeled for ammonia service by the manufacturer.

(i) Liquid meters shall be designed for a minimum working pressure of 250 p.s.i.g.

(ii) The metering system shall incorporate devices that will prevent the inadvertent measurement of vapor.

(13) Tank car unloading points and operations.

(a) Provisions for unloading tank cars shall conform to the regulations of the department of transportation.

(b) Unloading operations shall be performed by reliable persons properly instructed and made responsible for careful compliance with all applicable procedures.

(c) Caution signs shall be so placed on the track or car as to give necessary warning to persons approaching car from open end or ends of siding and shall be left up until after car is unloaded and disconnected from discharge connections. Signs shall be of metal or other suitable material, at least twelve by fifteen inches in size and bear the words "STOP—Tank car connected" or "STOP—Men at work" the word "STOP," being in letters at least four inches high and the other words in letters at least two inches high. The letters shall be white on a blue background.

(d) The track of a tank car siding shall be substantially level.

(e) Brakes shall be set and wheels blocked on all cars being unloaded.

(f) Tank cars of anhydrous ammonia shall be unloaded only at approved locations meeting the requirements of subsections (9)(c) and (12)(h) of this section.

(14) Liquid level gaging device.

(a) Each container except those filled by weight shall be equipped with an approved liquid level gaging device.

(b) All gaging devices shall be arranged so that the maximum liquid level to which the container is filled is readily determined. (See subsection (4)(b)(vii) of this section.)

(c) Gaging devices that require bleeding of the product to the atmosphere such as the rotary tube, fixed tube, and slip tube devices, shall be designed so that the maximum opening of the bleed valve is not larger than No. 54 drill size unless provided with an excess flow valve. (This requirement does not apply to farm vehicles used for the application of ammonia as covered in WAC 296-24-51021.)

(d) Gaging devices shall have a design pressure equal to or greater than the design pressure of the container on which they are installed.

(e) Fixed liquid level gages shall be so designed that the maximum volume of the container filled by liquid shall not exceed eighty-five percent of its water capacity. The coupling into which the fixed liquid level gage is threaded must be placed at the eighty-five percent level of the container. If located elsewhere, the dip tube of this gage must be installed in such a manner that it cannot be readily removed.

Note: This does not apply to refrigerated storage.

(f) Gage glasses of the columnar type shall be restricted to stationary storage installation. They shall be equipped with shutoff valves having metallic handwheels, with excess-flow valves, and with extra heavy glass adequately protected with a metal housing applied by the gage manufacturer. They shall be shielded against the direct rays of the sun.

(15) Painting of containers. Aboveground uninsulated containers should have a reflective surface maintained in good condition. White is recommended for painted surfaces, but other light reflecting colors are acceptable.

(16) Electrical equipment and wiring.

(a) Electrical equipment and wiring for use in ammonia installations shall be general purpose or weather resistant as appropriate.

(b) Where concentrations of ammonia in air in excess of sixteen percent by volume are likely to be encountered, electrical equipment and wiring shall be of a type specified by and be installed according to chapter 296-24 WAC Part L, for Class I, Group D locations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-24-51009, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-51009, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-51009, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-51009, filed 11/13/80; Order 76-6, § 296-24-51009, filed 3/1/76; Order 74-27, § 296-24-51009, filed 5/7/74; Order 73-5, § 296-24-51009, filed 5/9/73 and Order 73-4, § 296-24-51009, filed 5/7/73.]

WAC 296-24-51017 Systems mounted on trucks, semi-trailers, and trailers for transportation of ammonia.

This section applies specifically to systems mounted on trucks, semi-trailers and trailers (other than those covered under WAC 296-24-51019 and 296-24-51021) used for the transportation of ammonia. All basic rules of WAC 296-24-51009 apply to this section unless otherwise noted. Systems for trucks and trailers for transportation of anhydrous ammonia, in addition to complying with the requirements of these standards, shall also comply where required, with the requirements of the department of transportation and those of any other regulatory body which may apply.

(1) Design pressure of containers.

(a) Containers used in intrastate commerce shall be constructed in accordance with WAC 296-24-51009(2) with a minimum design pressure of 250 psig. Containers used in interstate commerce shall meet DOT regulations.

(b) The shell or head thickness of any container shall not be less than 3/16 inch.

(c) All container openings, except safety relief valves, liquid level gaging devices and pressure gages, shall be labeled to designate whether they communicate with liquid or vapor space. Labels may be on valves.

(d) Baffles are not required for cargo tanks.

(2) Mounting containers on truck.

(a) The means of attachment of any container to the cradle, frame or chassis of a vehicle shall be designed on a basis of two "g" loading in either direction, using a safety factor of not less than 4, based on the ultimate strength of the material used. For purposes of this requirement, two "g" of load support is equivalent to three times the static weight of the articles supported; two "g" of loading and bending, acceleration, and torsion is equivalent to twice the static weight support applied horizontally at the road surface.

(b) "Hold-down" devices, when used, shall anchor the container to the cradle, frame or chassis in a suitable and safe manner that will not introduce undue concentration of stresses. These devices shall incorporate positive means for drawing the container down tight, and suitable stops or anchors shall be provided to prevent relative movement between container and framing due to stopping, starting or changes in direction.

(c) Vehicles designed and constructed so that the cargo tanks constitute in whole or in part the stress member used in lieu of the frame shall be supported by external cradles suspending at least 120° of the shell circumference. The design calculation shall include beam stress, shear stress, torsion stress, bending moment and acceleration stress, in addition to those covered by the code under which the cargo tank was designed.

(d) If a liquid withdrawal line is installed in the bottom of a container, the connections thereto, including hose, shall not be lower than the lowest horizontal edge of the trailer axle.

(e) Provisions shall be made to secure both ends of the hose while in transit.

(f) When the cradle and the container are not welded together, suitable material shall be used between them to eliminate metal-to-metal friction.

(3) Container appurtenances.

(a) Nonrecessed container fittings and appurtenances shall be protected against physical damage by either: (i) A protected location, (ii) the vehicle frame or bumper, or (iii) a protective housing. The protective housing, if used, shall comply with the requirements under which the containers are fabricated with respect to design and construction, and shall be designed to withstand static loadings in any direction equal to twice the weight of the container and attachments when filled with the lading using a safety factor of not less than 4, based on the ultimate strength of the material to be used. The protective housing if used shall be protected with a weather cover, if necessary, to insure proper operation of valves and safety relief devices.

(b) All connections to containers, except filling connections (see WAC 296-24-51017 (3)(c)), safety relief devices, and liquid level and pressure gage connections, shall be provided with suitable automatic excess flow valves, or in lieu thereof, may be fitted with quick-closing internal valves, which shall remain closed except during delivery operations. The control mechanism for such valves may be provided with a secondary control remote from the delivery connections and such control mechanism shall be provided with a fusible section (melting point 208F to 220F) which will permit the internal valve to close automatically in case of fire.

(c) Filling connections shall be provided with automatic back-pressure check valves, excess-flow check valves, or quick-closing internal valves, to prevent back-flow in case the filling connection is broken. Where the filling and discharge connect to a common opening in the container shell and that opening is fitted with a quick-closing internal valve as specified in WAC 296-24-51017 (3)(b), the automatic valve shall not be required.

(d) All containers shall be equipped for spray loading (filling in the vapor space) or with an approved vapor return valve of adequate capacity.

(e) All containers shall be equipped with a fixed maximum liquid level gage.

(f) All containers shall be equipped with a pressure-indicating gage having a dial graduated from 0-400 psig.

(4) Piping and fittings.

(a) All piping, tubing and fittings shall be securely mounted and protected against physical damage.

(b) Piping used on nonrefrigerated systems shall be at least ASTM A-53 Grade B electric resistance welded and electric flash welded pipe or equal. Such pipe shall be at least Schedule 40 when joints are welded, or welded and flanged. Such pipe shall be at least Schedule 80 when joints are threaded. Brass, copper, or galvanized steel pipe or tubing shall not be used.

(c) The truck unloading line shall be provided with an excess flow valve at the hose connection unless an approved quick closing internal valve is provided in the container unloading connection. (See WAC 296-24-51017 (3)(b).)

(5) Safety relief devices. The discharge from container safety relief valves shall be vented away from the container upward and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container; loose fitting rain caps shall be used. Size of discharge lines from safety relief valves shall not be smaller than the nominal size of the safety relief valve outlet connection. Suitable provision shall be made for draining condensate which may accumulate in the discharge pipe.

(6) Marking of container. Every container, whether loaded or empty, shall be conspicuously and legibly marked on each side and rear thereof on a background of sharply contrasting color with the words "COMPRESSED GAS" in letters at least four inches high; or with the words "ANHYDROUS AMMONIA" in letters at least four inches high; or in compliance with department of transportation regulations.

(7) Transfer of liquids.

(a) The content of tank motor vehicle containers shall be determined by weight, by suitable liquid level gaging devices, meters, or other approved methods.

Note: If the content of a container is to be determined by liquid level measurement, the container shall have a thermometer well so that the internal liquid temperature can be easily determined. This volume when converted to weight shall not exceed the filling density specified by the department of transportation regulations.

(b) Pumps or compressors shall be designed and installed in accordance with WAC 296-24-51009(12) and protected against physical damage when mounted upon ammonia tank trucks and trailers.

(c) Tank motor vehicles of greater than 3500 water gallons capacity shall be unloaded only at approved locations meeting the requirements of WAC 296-24-51009 (10)(c) and (12)(h).

(8) Electrical equipment and lighting. Tank trucks, tank trailers, and tank semi-trailers, may not be equipped with any artificial light other than electric light. Electric lighting circuits shall have suitable overcurrent protection (fuses or automatic circuit breakers). The wiring shall have sufficient carrying capacity and mechanical strength, and shall be suitably secured, insulated and protected against physical damage.

(9) Chock blocks. At least two chock blocks shall be provided. These blocks shall be placed to prevent rolling of the vehicle whenever it is parked during loading and unloading operations.

(10) Portable tanks (including skid tanks). When portable tanks are used in lieu of cargo tanks and are permanently mounted on tank motor vehicles for the transportation of ammonia, they shall comply with the requirements of WAC

296-24-51017. Where portable tanks, including those built to DOT Specification 51, 106A or 110A, are used for farm storage they shall comply with WAC 296-24-51011. When portable tanks are used as shipping containers in interstate commerce they shall comply with WAC 296-24-51015.

(11) Safety equipment.

(a) All tank trucks, trailers, and semi-trailers should be equipped with the following for emergency and rescue purposes:

(i) One full face gas mask with anhydrous ammonia refill canisters.

(ii) One pair of protective gloves made of rubber or other material impervious to ammonia.

(iii) Tight-fitting goggles or one full face shield.

(iv) A container of not less than five gallons of readily available clean water.

* An ammonia canister is effective for short periods of time in light concentrations of ammonia vapor, generally 15 minutes in concentrations of 3% and will not protect breathing in heavier concentrations. If ammonia vapors are detected when mask is applied the concentration is too high for safety. The life of a canister in service is controlled by the percentage of vapors to which it is exposed. Canisters must not be opened until ready for use and should be discarded after use. Unopened canisters may be guaranteed for as long as three years. All should be dated when received because of this limited life. In addition to this protection, an independently supplied air mask of the type used by fire departments may be used for severe emergencies.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-51017, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-51017, filed 11/13/80; Order 76-6, § 296-24-51017, filed 3/1/76; Order 73-5, § 296-24-51017, filed 5/9/73 and Order 73-4, § 296-24-51017, filed 5/7/73.]

WAC 296-24-58503 Scope, application and definitions applicable. (1) Scope. This section contains requirements for fire brigades, and all portable and fixed fire suppression equipment, fire detection systems, and fire or employee alarm systems installed to meet the fire protection requirements of this chapter.

(2) Application. This section applies to all employments except for maritime, construction and agriculture.

(3) Definitions applicable to this section.

(a) "After-flame," means the time a test specimen continues to flame after the flame source has been removed.

(b) "Aqueous film forming foam (AFFF)," means a fluorinated surfactant with a foam stabilizer which is diluted with water to act as a temporary barrier to exclude air from mixing with the fuel vapor by developing an aqueous film on the fuel surface of some hydrocarbons which is capable of suppressing the generation of fuel vapors.

(c) "Approved," means acceptable to the director under the following criteria:

(i) If it is accepted, or certified, or listed, or labeled or otherwise determined to be safe by a nationally recognized testing laboratory; or

(ii) With respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another federal agency and found in compliance with the provisions of the applicable National Fire Protection Association Fire Code; or

(iii) With respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the director; and

(iv) For the purposes of (c) of this subsection:

(A) Equipment is listed if it is of a kind mentioned in a list which is published by a nationally recognized testing laboratory which makes periodic inspections of the production of such equipment and which states that such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner;

(B) Equipment is labeled if there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which makes periodic inspections of the production of such equipment and whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner;

(C) Equipment is accepted if it has been inspected and found by a nationally recognized testing laboratory to conform to specified plans or to procedures of applicable codes;

(D) Equipment is certified if it has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner or is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and if it bears a label, tag, or other record of certification; and

(E) Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(d) "Automatic fire detection device," means a device designed to automatically detect the presence of fire by heat, flame, light, smoke or other products of combustion.

(e) "Buddy-breathing device," means an accessory to self-contained breathing apparatus which permits a second person to share the same air supply as that of the wearer of the apparatus.

(f) "Carbon dioxide," means a colorless, odorless, electrically nonconductive inert gas (chemical formula CO_2) that is a medium for extinguishing fires by reducing the concentration of oxygen or fuel vapor in the air to the point where combustion is impossible.

(g) "Class A fire," means a fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.

(h) "Class B fire," means a fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.

(i) "Class C fire," means a fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.

(j) "Class D fire," means a fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.

(k) "Dry chemical," means an extinguishing agent composed of very small particles of chemicals such as, but not limited to, sodium bicarbonate, potassium bicarbonate, urea-based potassium bicarbonate, potassium chloride, or monoammonium phosphate supplemented by special treatment to provide resistance to packing and moisture absorp-

tion (caking) as well as to provide proper flow capabilities. Dry chemical does not include dry powders.

(l) "Dry powder," means a compound used to extinguish or control Class D fires.

(m) "Education," means the process of imparting knowledge or skill through systematic instruction. It does not require formal classroom instruction.

(n) "Enclosed structure," means a structure with a roof or ceiling and at least two walls which may present fire hazards to employees, such as accumulations of smoke, toxic gases and heat similar to those found in buildings.

(o) "Extinguisher classification," means the letter classification given an extinguisher to designate the class or classes of fire on which an extinguisher will be effective.

(p) "Extinguisher rating," means the numerical rating given to an extinguisher which indicates the extinguishing potential of the unit based on standardized tests developed by Underwriters' Laboratories, Inc.

(q) "Fixed extinguishing system," means a permanently installed system that either extinguishes or controls a fire at the location of the system.

(r) "Flame resistance," is the property of materials, or combinations of component materials, to retard ignition and restrict the spread of flame.

(s) "Foam," means a stable aggregation of small bubbles which flow freely over a burning liquid surface and form a coherent blanket which seals combustible vapors and thereby extinguishes the fire.

(t) "Gaseous agent," is a fire extinguishing agent which is in the gaseous state at normal room temperature and pressure. It has low viscosity, can expand or contract with changes in pressure and temperature, and has the ability to diffuse readily and to distribute itself uniformly throughout an enclosure.

(u) "Halon 1211," means a colorless, faintly sweet smelling, electrically nonconductive liquefied gas (chemical formula CBrClF_2) which is a medium for extinguishing fires by inhibiting the chemical chain reaction of fuel and oxygen. It is also known as bromochlorodifluoromethane.

(v) "Halon 1301," means a colorless, odorless, electrically nonconductive gas (chemical formula CBrF_3) which is a medium for extinguishing fires by inhibiting the chemical chain reaction of fuel and oxygen. It is also known as bromotrifluoromethane.

(w) "Helmet," is a head protective device consisting of a rigid shell, energy absorption system and chin strap intended to be worn to provide protection for the head or portions thereof, against impact, flying or falling objects, electric shock, penetration, heat and flame.

(x) "Incipient stage fire," means a fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

(y) Industrial fire brigade: An organized group of employees whose primary employment is other than fire fighting who are knowledgeable, trained and skilled in specialized operations based on site-specific hazards present at a single commercial facility or facilities under the same management.

(z) "Inspection," means a visual check of fire protection systems and equipment to ensure that they are in place, charged, and ready for use in the event of a fire.

(aa) "Interior structural fire fighting," means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.

(bb) "Lining," means a material permanently attached to the inside of the outer shell of a garment for the purpose of thermal protection and padding.

(cc) "Local application system," means a fixed fire suppression system which has a supply of extinguishing agent, with nozzles arranged to automatically discharge extinguishing agent directly on the burning material to extinguish or control a fire.

(dd) "Maintenance," means the performance of services on fire protection equipment and systems to assure that they will perform as expected in the event of a fire. Maintenance differs from inspection in that maintenance requires the checking of internal fitting, devices and agent supplies.

(ee) "Multipurpose dry chemical," means a dry chemical which is approved for use on Class A, Class B and Class C fires.

(ff) "Outer shell," is the exterior layer of material on the fire coat and protective trousers which forms the outermost barrier between the fire fighter and the environment. It is attached to the vapor barrier and liner and is usually constructed with a storm flap, suitable closures, and pockets.

(gg) "Positive-pressure breathing apparatus," means self-contained breathing apparatus in which the pressure in the breathing zone is positive in relation to the immediate environment during inhalation and exhalation.

(hh) "Predischage employee alarm," means an alarm which will sound at a set time prior to actual discharge of an extinguishing system so that employees may evacuate the discharge area prior to system discharge.

(ii) "Quick disconnect valve," means a device which starts the flow of air by inserting of the hose (which leads from the facepiece) into the regulator of self-contained breathing apparatus, and stops the flow of air by disconnection of the hose from the regulator.

(jj) "Sprinkler alarm," means an approved device installed so that any waterflow from a sprinkler system equal to or greater than that from single automatic sprinkler will result in an audible alarm signal on the premises.

(kk) "Sprinkler system," means a system of piping designed in accordance with fire protection engineering standards and installed to control or extinguish fires. The system includes an adequate and reliable water supply, and a network of specially sized piping and sprinklers which are interconnected. The system also includes a control valve and a device for actuating an alarm when the system is in operation.

(ll) "Standpipe systems:"

(i) "Class I standpipe system," means a two and one-half-inch (6.3 cm) hose connection for use by fire departments and those trained in handling heavy fire streams.

(ii) "Class II standpipe system," means a one and one-half-inch (3.8 cm) hose system which provides a means for the control or extinguishment of incipient stage fires.

(iii) "Class III standpipe system," means a combined system of hose which is for the use of employees trained in the use of hose operations and which is capable of furnishing effective water discharge during the more advanced stages of fire (beyond the incipient stage) in the interior of workplaces. Hose outlets are available for both one and one-half-inch (3.8 cm) and two and one-half-inch (6.3 cm) hose.

(iv) "Small hose system," means a system of hose ranging in diameter from five-eighths-inch (1.6 cm) up to one and one-half-inch (3.8 cm) which is for the use of employees and which provides a means for the control and extinguishment of incipient stage fires.

(mm) "Total flooding system," means a fixed suppression system which is arranged to automatically discharge a predetermined concentration of agent into an enclosed space for the purpose of fire extinguishment or control.

(nn) "Training," means the process of making proficient through instruction and hands-on practice in the operation of equipment, including respiratory protection equipment, that is expected to be used in the performance of assigned duties.

(oo) "Vapor barrier," means that material used to prevent or substantially inhibit the transfer of water, corrosive liquids and steam or other hot vapors from the outside of a garment to the wearer's body.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-24-58503, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 95-22-015, § 296-24-58503, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW, 94-06-068 (Order 93-17), § 296-24-58503, filed 3/2/94, effective 3/1/95; 88-23-054 (Order 88-25), § 296-24-58503, filed 11/14/88; 87-24-051 (Order 87-24), § 296-24-58503, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050, 82-02-003 (Order 81-32), § 296-24-58503, filed 12/24/81.]

WAC 296-24-58505 Fire brigades. Scope and application.

(1) Scope. This section applies only to fire brigades and contains requirements for the organization, training and required personal protective equipment of fire brigades whenever they are established by an employer.

(2) Application. The requirements of this section apply to fire brigades, industrial fire departments and private or contractual type fire departments. Personal protective equipment requirements apply only to members of fire brigades performing interior structural fire fighting. The requirements of this section do not apply to airport crash rescue or forest fire fighting operations.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-24-58505, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050, 82-02-003 (Order 81-32), § 296-24-58505, filed 12/24/81.]

WAC 296-24-58513 Protective clothing. The following requirements apply to those employees who perform interior structural fire fighting. The requirements do not apply to employees who use fire extinguishers or standpipe systems to control or extinguish fires only in the incipient stage.

(1) General.

(a) The employer shall provide at no cost to the employee and assure the use of protective clothing which complies with the requirements of this section. The employer shall assure that protective clothing ordered or purchased after January 1, 1982, meets the requirements contained in

this section. As the new equipment is provided, the employer shall assure that all fire brigade members wear the equipment when performing interior structural fire fighting. After July 1, 1985, the employer shall assure that all fire brigade members wear protective clothing meeting the requirements of this section when performing interior structural fire fighting.

(b) The employer shall assure that protective clothing protects the head, body, and extremities, and consists of at least the following components: Foot and leg protection; hand protection; body protection; eye, face and head protection.

(2) Foot and leg protection.

(a) Foot and leg protection shall meet the requirements of (b) and (c) of this subsection, and may be achieved by either of the following methods:

(i) Fully extended boots which provide protection for the legs; or

(ii) Protective shoes or boots worn in combination with protective trousers that meet the requirements of subsection (3) of this section.

(b) Protective footwear shall meet the requirements of WAC 296-24-088 for Class 75 footwear. In addition, protective footwear shall be water-resistant for at least five inches (12.7 cm) above the bottom of the heel and shall be equipped with slip-resistant outer soles.

(c) Protective footwear shall be tested in accordance with WAC 296-24-63599(1) Appendix E, and shall provide protection against penetration of the midsole by a size 8D common nail when at least 300 pounds (1330 N) of static force is applied to the nail.

(3) Body protection.

(a) Body protection shall be coordinated with foot and leg protection to ensure full body protection for the wearer. This shall be achieved by one of the following methods:

(i) Wearing of a fire-resistive coat meeting the requirements of (b) of this subsection, in combination with fully extended boots meeting the requirements of subsection (2)(b) and (c) of this section; or

(ii) Wearing of fire-resistive coat in combination with protective trousers both of which meet the requirements of (b) of this subsection.

(b) The performance, construction, and testing of fire-resistive coats and protective trousers shall be at least equivalent to the requirements of the National Fire Protection Association (NFPA) standard NFPA No. 1971-1975, "Protective Clothing for Structural Fire Fighting," (see WAC 296-24-63499, Appendix D) with the following permissible variations from those requirements:

(i) Tearing strength of the outer shell shall be a minimum of eight pounds (35.6 N) in any direction when tested in accordance with WAC 296-24-63599(2), Appendix E; and

(ii) The outer shell may discolor but shall not separate or melt when placed in a forced air laboratory oven at a temperature of 500°F (260°C) for a period of five minutes. After cooling to ambient temperature and using the test method specified in WAC 296-24-63599(3) Appendix E, char length shall not exceed 4.0 inches (10.2 cm) and after-flame shall not exceed 2.0 seconds.

(4) Hand protection.

(a) Hand protection shall consist of protective gloves or glove system which will provide protection against cut, puncture, and heat penetration. Gloves or glove system shall be tested in accordance with the test methods contained in the National Institute for Occupational Safety and Health (NIOSH) 1976 publication, "The Development of Criteria for Fire Fighter's Gloves; Vol. II, Part II: Test Methods," (see WAC 296-24-63499, Appendix D—Availability of publications incorporated by references in WAC 296-24-58505—Fire brigades) and shall meet the following criteria for cut, puncture, and heat penetration:

(i) Materials used for gloves shall resist surface cut by a blade with an edge having a 60 degree included angle and a .001 inch (.0025 cm.) radius, under an applied force of 16 lbf (72N) and at a slicing velocity of greater or equal to 60 in/min. (2.5 cm/sec);

(ii) Materials used for the palm and palm side of the fingers shall resist puncture by a penetrometer (simulating a 4d lath nail), under an applied force of 13.2 lbf (60N) and at a velocity greater or equal to 20 in/min. (.85 cm/sec); and

(iii) The temperature inside the palm and gripping surface of the fingers of gloves shall not exceed 135°F (57°C) when gloves or glove system are exposed to 932°F (500°C) for five seconds at 4 psi (28 kPa) pressure.

(b) Exterior materials of gloves shall be flame resistant and shall be tested in accordance with WAC 296-24-63599(3) Appendix E. Maximum allowable after-flame shall be 2.0 seconds, and the maximum char length shall be 4.0 inches (10.2 cm).

(c) When design of the fire-resistive coat does not otherwise provide protection for the wrists, protective gloves shall have wristlets of at least 4.0 inches (10.2 cm) in length to protect the wrist area when the arms are extended upward and outward from the body.

(5) Head, eye and face protection.

(a) Head protection shall consist of a protective head device with ear flaps and chin strap which meet the performance, construction, and testing requirements of the National Fire Safety and Research Office of the National Fire Prevention and Control Administration, United States Department of Commerce (now known as the United States Fire Administration), which are contained in, "Model Performance Criteria for Structural Fire Fighters' Helmets," (August 1977) (see WAC 296-24-63499, Appendix D).

(b) Protective eye and face devices which comply with WAC 296-24-078 shall be used by fire brigade members when performing operations where the hazards of flying or falling materials which may cause eye and face injuries are present. Protective eye and face devices provided as accessories to protective head devices (face shields) are permitted when such devices meet the requirements of WAC 296-24-078.

(c) Full facepieces, helmets, or hoods of breathing apparatus which meet the requirements of chapter 296-62 WAC, Part E and WAC 296-24-58515, shall be acceptable as meeting the eye and face protection requirements of (b) of this subsection.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-58513, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58513, filed

7/20/94, effective 9/20/94; 92-23-017 (Order 92-13), § 296-24-58513, filed 11/10/92, effective 12/18/92; 90-03-029 (Order 89-20), § 296-24-58513, filed 1/11/90, effective 2/26/90; 88-14-108 (Order 88-11), § 296-24-58513, filed 7/6/88; 87-24-051 (Order 87-24), § 296-24-58513, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58513, filed 12/24/81.]

WAC 296-24-58515 Respiratory protection devices.

(1) General requirements.

(a) The employer shall ensure that respirators are provided to, and used by, fire brigade members, and that the respirators meet the requirements of chapter 296-62 WAC, Part E and this section.

(b) The employer must ensure that all employees engaged in interior structural fire fighting use self-contained breathing apparatus (SCBAs).

(c) Approved self-contained breathing apparatus may be equipped with either a "buddy-breathing" device or a quick disconnect valve, even if these devices are not certified by NIOSH. If these accessories are used, they shall not cause damage to the apparatus, or restrict the air flow of the apparatus, or obstruct the normal operation of the apparatus.

(d) Approved self-contained compressed air breathing apparatus may be used with approved cylinders from other approved self-contained compressed air breathing apparatus provided that such cylinders are of the same capacity and pressure rating. All compressed air cylinders used with self-contained breathing apparatus shall meet DOT and NIOSH criteria.

(e) Self-contained breathing apparatus shall have a minimum service life rating of 30 minutes in accordance with the methods and requirements specified by NIOSH under 42 CFR part 84, except for escape self-contained breathing apparatus (ESCBAs) used only for emergency escape purposes.

(f) Self-contained breathing apparatus shall be provided with an indicator which automatically sounds an audible alarm when the remaining service life of the apparatus is reduced to within a range of twenty to twenty-five percent of its rated service time.

(2) Positive-pressure breathing apparatus.

(a) The employer shall assure that self-contained breathing apparatus ordered or purchased after January 1, 1982, for use by fire brigade members performing interior structural fire fighting operations, are of the pressure-demand or other positive-pressure type. Effective July 1, 1983, only pressure-demand or other positive-pressure self-contained breathing apparatus shall be worn by fire brigade members performing interior structural fire fighting.

(b) This section does not prohibit the use of a self-contained breathing apparatus where the apparatus can be switched from a demand to a positive-pressure mode. However, such apparatus shall be in the positive-pressure mode when fire brigade members are performing interior structural fire fighting operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-58515, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58515, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58515, filed 12/24/81.]

WAC 296-24-58516 Procedures for interior structural fire fighting. In addition to the requirements in WAC 296-62-07172, in interior structural fires, the employer must ensure that:

(1) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times; and

(2) At least two employees are located outside the IDLH atmosphere.

Note 1: One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any fire fighter working at the incident.

Note 2: Nothing in this section is meant to preclude fire fighters from performing emergency rescue activities before an entire team has assembled.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-58516, filed 5/4/99, effective 9/1/99.]

WAC 296-24-58517 Appendix A—Fire brigades. (1)

Scope. This section does not require an employer to organize a fire brigade. However, if an employer does decide to organize a fire brigade, the requirements of this section apply.

(2) Prefire planning. It is suggested that prefire planning be conducted by the local fire department and/or the workplace fire brigade in order for them to be familiar with the workplace and process hazards. Involvement with the local fire department or fire prevention bureau is encouraged to facilitate coordination and cooperation between members of the fire brigade and those who might be called upon for assistance during a fire emergency.

(3) Organizational statement. In addition to the information required in the organizational statement, WAC 296-24-58507(1), it is suggested that the organizational statement also contain the following information: A description of the duties that the fire brigade members are expected to perform; the line authority of each fire brigade officer; the number of the fire brigade officers and number of training instructors; and a list and description of the types of awards or recognition that brigade members may be eligible to receive.

(4) Physical capability. The physical capability requirement applies only to those fire brigade members who perform interior structural fire fighting. Employees who cannot meet the physical capability requirement may still be members of the fire brigade as long as such employees do not perform interior structural fire fighting. It is suggested that fire brigade members who are unable to perform interior structural fire fighting be assigned less stressful and physically demanding fire brigade duties, e.g., certain types of training, recordkeeping, fire prevention inspection and maintenance, and fire pump operations.

Physically capable can be defined as being able to perform those duties specified in the training requirements of WAC 296-24-58509. Physically capable can also be determined by physical performance tests or by a physical examination when the examining physician is aware of the duties that the fire brigade member is expected to perform.

It is also recommended that fire brigade members participate in a physical fitness program. There are many benefits which can be attributed to being physically fit. It is believed

that physical fitness may help to reduce the number of sprain and strain injuries as well as contributing to the improvement of the cardiovascular system.

(5) Training and education. The section on training and education does not contain specific training and education requirements because the type, amount, and frequency of training and education will be as varied as are the purposes for which fire brigades are organized. However, the section does require that training and education be commensurate with those functions that the fire brigade is expected to perform; i.e., those functions specified in the organizational statement. Such a performance requirement provides the necessary flexibility to design a training program which meets the needs of individual fire brigades.

At a minimum, hands-on training is required to be conducted annually for all fire brigade members. However, for those fire brigade members who are expected to perform interior structural fire fighting, some type of training or education session must be provided at least quarterly.

In addition to the required hands-on training, it is strongly recommended that fire brigade members receive other types of training and education such as: Classroom instruction, review of emergency action procedures, prefire planning, review of special hazards in the workplace, and practice in the use of self-contained breathing apparatus.

It is not necessary for the employer to duplicate the same training or education that a fire brigade member receives as a member of a community volunteer fire department, rescue squad, or similar organization. However, such training or education must have been provided to the fire brigade member within the past year and it must be documented that the fire brigade member has received the training or education. For example: There is no need for a fire brigade member to receive another training class in the use of positive-pressure self-contained breathing apparatus if the fire brigade member has recently completed such training as a member of a community fire department. Instead, the fire brigade member should receive training or education covering other important equipment or duties of the fire brigade as they relate to the workplace hazards, facilities and processes.

It is generally recognized that the effectiveness of fire brigade training and education depends upon the expertise of those providing the training and education as well as the motivation of the fire brigade members. Fire brigade training instructors must receive a higher level of training and education than the fire brigade members they will be teaching. This includes being more knowledgeable about the functions to be performed by the fire brigade and the hazards involved. The instructors should be qualified to train fire brigade members and demonstrate skills in communication, methods of teaching, and motivation. It is important for instructors and fire brigade members alike to be motivated toward the goal of the fire brigade and be aware of the importance of the service that they are providing for the protection of other employees and the workplace.

It is suggested that publications from the International Fire Service Training Association, the National Fire Protection Association (NFPA-1041), the International Society of Fire Service Instructors and other fire training sources be

consulted for recommended qualifications of fire brigade training instructors.

In order to be effective, fire brigades must have competent leadership and supervision. It is important for those who supervise the fire brigade during emergency situations, e.g., fire brigade chiefs, leaders, etc., to receive the necessary training and education for supervising fire brigade activities during these hazardous and stressful situations. These fire brigade members with leadership responsibilities should demonstrate skills in strategy and tactics, fire suppression and prevention techniques, leadership principles, prefire planning, and safety practices. It is again suggested that fire service training sources be consulted for determining the kinds of training and education which are necessary for those with fire brigade leadership responsibilities.

It is further suggested that fire brigade leaders and fire brigade instructors receive more formalized training and education on a continuing basis by attending classes provided by such training sources as universities and university fire extension services.

The following recommendations should not be considered to be all of the necessary elements of a complete comprehensive training program, but the information may be helpful as a guide in developing a fire brigade training program.

All fire brigade members should be familiar with exit facilities and their location, emergency escape routes for handicapped workers, and the workplace "emergency action plan."

In addition, fire brigade members who are expected to control and extinguish fires in the incipient stage should, at a minimum, be trained in the use of fire extinguishers, standpipes, and other fire equipment they are assigned to use. They should also be aware of first aid medical procedures and procedures for dealing with special hazards to which they may be exposed. Training and education should include both classroom instruction and actual operation of the equipment under simulated emergency conditions. Hands-on type training must be conducted at least annually but some functions should be reviewed more often.

In addition to the above training, fire brigade members who are expected to perform emergency rescue and interior structural fire fighting should, at a minimum, be familiar with the proper techniques in rescue and fire suppression procedures. Training and education should include fire protection courses, classroom training, simulated fire situations including "wet drills" and, when feasible, extinguishment of actual mock fires. Frequency of training or education must be at least quarterly, but some drills or classroom training should be conducted as often as monthly or even weekly to maintain the proficiency of fire brigade members.

There are many excellent sources of training and education that the employer may want to use in developing a training program for the workplace fire brigade. These sources include publications, seminars, and courses offered by universities.

There are also excellent fire school courses by such facilities as Texas A and M University, Delaware State Fire School, Lamar University, and Reno Fire School, that deal with those unique hazards which may be encountered by fire

brigades in the oil and chemical industry. These schools, and others, also offer excellent training courses which would be beneficial to fire brigades in other types of industries. These courses should be a continuing part of the training program, and employers are strongly encouraged to take advantage of these excellent resources.

It is also important that fire brigade members be informed about special hazards to which they may be exposed during fire and other emergencies. Such hazards as storage and use areas of flammable liquids and gases, toxic chemicals, water-reactive substances, etc., can pose difficult problems. There must be written procedures developed that describe the actions to be taken in situations involving special hazards. Fire brigade members must be trained in handling these special hazards as well as keeping abreast of any changes that occur in relation to these special hazards.

(6) Fire fighting equipment. It is important that fire fighting equipment that is in damaged or unserviceable condition be removed from service and replaced. This will prevent fire brigade members from using unsafe equipment by mistake.

Fire fighting equipment, except portable fire extinguishers and respirators, must be inspected at least annually. Portable fire extinguishers and respirators are required to be inspected at least monthly.

(7) Protective clothing.

(a) General. WAC 296-24-58513 does not require all fire brigade members to wear protective clothing. It is not the intention of these standards to require employers to provide a full ensemble of protective clothing for every fire brigade member without consideration given to the types of hazardous environments to which the fire brigade member might be exposed. It is the intention of these standards to require adequate protection for those fire brigade members who might be exposed to fires in an advanced stage, smoke, toxic gases, and high temperatures. Therefore, the protective clothing requirements only apply to those fire brigade members who perform interior structural fire fighting operations.

Additionally, the protective clothing requirements do not apply to the protective clothing worn during outside fire fighting operations (brush and forest fires, crash crew operations) or other special fire fighting activities. It is important that the protective clothing to be worn during these types of fire fighting operations reflect the hazards which are expected to be encountered by fire brigade members.

(b) Foot and leg protection. WAC 296-24-58513 permits an option to achieve foot and leg protection.

The section recognizes the interdependence of protective clothing to cover one or more parts of the body. Therefore, an option is given so that fire brigade members may meet the foot and leg requirements by either wearing long fire-resistant coats in combination with fully extended boots, or by wearing shorter fire-resistant coats in combination with protective trousers and protective shoes or shorter boots.

(c) Body protection. WAC 296-24-58513(3) provides an option for fire brigade members to achieve body protection. Fire brigade members may wear a fire-resistant coat in combination with fully extended boots, or they may wear a fire-resistant coat in combination with protective trousers.

Fire-resistant coats and protective trousers meeting all of the requirements contained in NFPA 1971-1975, "Protective

Clothing for Structural Fire Fighters," are acceptable as meeting the requirements of this standard.

The lining is required to be permanently attached to the outer shell. However, it is permissible to attach the lining to the outer shell material by stitching in one area such as at the neck. Fastener tape or snap fasteners may be used to secure the rest of the lining to the outer shell to facilitate cleaning. Reference to permanent lining does not refer to a winter liner which is a detachable extra lining used to give added protection to the wearer against the effects of cold weather and wind.

(d) Hand protection. The requirements of WAC 296-24-58513(4) on hand protection may be met by protective gloves or a glove system. A glove system consists of a combination of different gloves. The usual components of a glove system consist of a pair of gloves, which provide thermal insulation to the hand, worn in combination with a second pair of gloves which provide protection against flame, cut and puncture.

It is suggested that protective gloves provide dexterity and a sense of feel for objects. Criteria and test methods for dexterity are contained in the NIOSH publications, "The Development of Criteria for Firefighters' Gloves; Vol. I: Glove Requirements," and "Vol. II: Glove Criteria and Test Methods." These NIOSH publications also contain a permissible modified version of Federal Test Method 191, Method 5903, (WAC 296-24-63599(3) Appendix E) for flame resistance when gloves, rather than glove material, are tested for flame resistance.

(e) Head, eye and face protection. Head protective devices which meet the requirements contained in NFPA No. 1972 are acceptable as meeting the requirements of this standard for head protection.

Head protective devices are required to be provided with ear flaps so that the ear flaps will be available if needed. It is recommended that ear protection always be used while fighting interior structural fires.

Many head protective devices are equipped with face shields to protect the eyes and face. These face shields are permissible as meeting the eye and face protection requirements of this section as long as such face shields meet the requirements of WAC 296-24-078 of the general safety and health standards.

Additionally, full facepieces, helmets or hoods of approved breathing apparatus which meet the requirements of WAC 296-62-071 and 296-24-58515 are also acceptable as meeting the eye and face protection requirements.

It is recommended that a flame resistant protective head covering such as a hood or snood, which will not adversely affect the seal of a respirator facepiece, be worn during interior structural fire fighting operations to protect the sides of the face and hair.

(8) Respiratory protective devices. Respiratory protection is required to be worn by fire brigade members while working inside buildings or confined spaces where toxic products of combustion or an oxygen deficiency is likely to be present; respirators are also to be worn during emergency situations involving toxic substances. When fire brigade members respond to emergency situations, they may be exposed to unknown contaminants in unknown concentrations. Therefore, it is imperative that fire brigade members

wear proper respiratory protective devices during these situations. Additionally, there are many instances where toxic products of combustion are still present during mop-up and overhaul operations. Therefore, fire brigade members should continue to wear respirators during these types of operations.

Self-contained breathing apparatus are not required to be equipped with either buddy-breathing device or a quick disconnect valve. However, these accessories may be very useful and are acceptable as long as such accessories do not cause damage to the apparatus, restrict the air flow of the apparatus, or obstruct the normal operation of the apparatus.

Buddy-breathing devices are useful for emergency situations where a victim or another fire brigade member can share the same air supply with the wearer of the apparatus for emergency escape purposes.

The employer is encouraged to provide fire brigade members with an alternative means of respiratory protection to be used only for emergency escape purposes if the self-contained breathing apparatus becomes inoperative. Such alternative means of respiratory protection may be either a buddy-breathing device or an escape self-contained breathing apparatus (ESCBAs). The ESCBA is a short-duration respiratory protective device which is approved for only emergency escape purposes. It is suggested that if ESCBAs are used, that they be of at least five minutes service life.

Quick disconnect valves are devices which start the flow of air by insertion of the hose (which leads to the facepiece) into the regulator of self-contained breathing apparatus, and stop the flow of air by disconnecting the hose from the regulator. These devices are particularly useful for those positive-pressure self-contained breathing apparatus which do not have the capability of being switched from the demand to the positive-pressure mode.

The use of a self-contained breathing apparatus where the apparatus can be switched from a demand to a positive-pressure mode is acceptable as long as the apparatus is in the positive-pressure mode when performing interior structural fire fighting operations. Also acceptable are approved respiratory protective devices which have been converted to the positive-pressure type when such modification is accomplished by trained and experienced persons using kits or parts approved by NIOSH and provided by the manufacturer and by following the manufacturer's instructions.

There are situations which require the use of respirators which have a duration of two hours or more. Presently, there are no approved positive-pressure apparatus with a rated service life of more than two hours. Consequently, negative-pressure self-contained breathing apparatus with a rated service life of more than two hours and which have a minimum protection factor of 5,000 as determined by an acceptable quantitative fit test performed on each individual, will be acceptable for use during situations which require long duration apparatus. Long duration apparatus may be needed in such instances as working in tunnels, subway systems, etc. Such negative-pressure breathing apparatus will continue to be acceptable for a maximum of eighteen months after a positive-pressure apparatus with the same or longer rated service life of more than two hours is certified by NIOSH/MSHA. After this eighteen-month phase-in period, all self-contained

breathing apparatus used for these long duration situations will have to be of the positive-pressure type.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-58517, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58517, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58517, filed 12/24/81.]

WAC 296-24-67507 Definitions. (1) Abrasive. A solid granular substance used in an abrasive blasting operation.

(2) Abrasive blasting. The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

(3) Abrasive-blasting respirator. A respirator constructed so that it covers the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive.

(4) Air-line respirator. A device consisting of a facepiece, helmet, or hood to which clean air is supplied to the wearer through a small-diameter hose from a compressed air source.

(5) Blast cleaning barrel. A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

(6) Blast cleaning room. A complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

(7) Blasting cabinet. An enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

(8) Clean air. Air of such purity that it will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

(9) Dust collector. A device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

(10) Exhaust ventilation system. A system for removing contaminated air from a space, comprising two or more of the following elements; (a) enclosure or hood, (b) duct work, (c) dust collecting equipment, (d) exhaust, and (e) discharge stack.

(11) Particulate-filter respirator. An air purifying respirator, commonly referred to as a dust respirator, which removes most of the dust or fume from the air passing through the device.

(12) Respirable dust. Airborne dust in sizes capable of passing through the upper respiratory system to reach the lower lung passages.

(13) Rotary blast cleaning table. An enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-67507, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67507, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-67507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-67507, filed 5/9/73 and Order 73-4, § 296-24-67507, filed 5/7/73.]

WAC 296-24-67515 Personal protective equipment.

(1) Employers must use only respirators certified by NIOSH under 42 CFR part 84 for protecting employees from dusts produced during abrasive-blasting operations.

(2) Abrasive-blasting respirators. Abrasive-blasting respirators must be worn by all abrasive-blasting operators in the following situations: (a) When working inside of blast cleaning rooms, or (b) when using silica sand in manual blasting operations except where the nozzle and blast are physically separated from the operator in an exhaust ventilated enclosure, or (c) where concentrations of toxic dusts dispersed by the abrasive blasting may exceed the limits set in chapter 296-62 WAC, Part E except where the nozzle and blast are physically separated from the operator in an exhaust-ventilated enclosure.

(3) Particulate-filter respirators.

(a) Properly fitted particulate-filter respirators, commonly referred to as dust-filter respirators, may be used for short, intermittent, or occasional dust exposures such as clean-up, dumping of dust collectors, or unloading shipments of sand at a receiving point when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means.

(b) Dust-filter respirators may also be used to protect the operator of outside (outdoor) abrasive-blasting operations where nonsilica abrasives are used on materials having low toxicity.

Note: The selection of a dust-filter respirator depends on the amount of dust in the breathing zone of the user. See WAC 296-62-07113 - Table 5.

(c) Dust-filter respirators used must be certified by NIOSH under 42 CFR part 84 for protection against the specific type of dust encountered.

(d) Dust-filter respirators must be properly fitted as required in chapter 296-62 WAC, Part E.

(e) Dust-filter respirators must not be used for continuous protection where silica sand is used as the blasting abrasive, or when toxic materials are blasted.

(4) A respiratory protection program as required in chapter 296-62 WAC, Part E must be established wherever it is necessary to use respirators.

(5) Personal protective clothing.

(a) Operators must be equipped with heavy canvas or leather gloves and aprons or equivalent protection to protect them from the impact of abrasives.

(b) Safety shoes must be worn where there is a hazard of foot injury.

(c) Equipment for protection of the eyes and face must be supplied to the operator and to other personnel working near abrasive blasting operations when the respirator design does not provide such protection.

(6) Personal protective clothing, equipment and their use must comply with WAC 296-24-075 (Part A2).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-67515, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67515, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-67515, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-67515, filed 5/9/73 and Order 73-4, § 296-24-67515, filed 5/7/73.]

WAC 296-24-67517 Air supply and air compressors.

Clean air supply. The air for abrasive-blasting respirators must be free of harmful quantities of dusts, mists, or noxious gases, and must meet the requirements for supplied-air quality and use as specified in chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-67517, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67517, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67517, filed 5/9/73 and Order 73-4, § 296-24-67517, filed 5/7/73.]

WAC 296-24-71507 Ventilation in confined spaces.

(1) Air replacement. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. All air replacing that withdrawn shall be clean and respirable.

(2) Airline respirators. In such circumstances where it is impossible to provide such ventilation, airline respirators or hose masks approved for this purpose by the National Institute for Occupational Safety and Health (NIOSH) under 42 CFR part 84 must be used.

(3) Self-contained units. In areas immediately hazardous to life, a full-facepiece, pressure-demand, self-contained breathing apparatus or a combination full-facepiece, pressure-demand supplied-air respirator with an auxiliary, self-contained air supply certified by NIOSH under 42 CFR part 84 must be used.

(4) Outside helper. Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH), a worker shall be stationed on the outside of such confined spaces to insure the safety of those working within.

(5) Oxygen for ventilation. Oxygen shall not be used for ventilation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71507, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71507, filed 5/9/73 and Order 73-4, § 296-24-71507, filed 5/7/73.]

WAC 296-24-71513 Lead. (1) Confined spaces. In confined spaces, welding involving lead-base metals (erroneously called lead-burning) shall be done in accordance with WAC 296-24-71507 (1) through (5).

(2) Indoors. Indoors, welding involving lead-base metals shall be done in accordance with WAC 296-24-71505 (1) and (2).

(3) Local ventilation. In confined spaces or indoors, welding or cutting operations involving metals containing lead, other than as an impurity, or involving metals coated with lead-bearing materials, including paint must be done using local exhaust ventilation or airline respirators. Such operations, when done outdoors, must be done using respirators, certified for this purpose by NIOSH under 42 CFR part 84. In all cases, workers in the immediate vicinity of the cut-

tig operation must be protected as necessary by local exhaust ventilation or airline respirators.

Note: See chapter 296-62 WAC for additional requirements on lead.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71513, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71513, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71513, filed 5/9/73 and Order 73-4, § 296-24-71513, filed 5/7/73.]

WAC 296-24-71517 Cadmium. (1) General. In confined spaces or indoors, welding or cutting operations involving cadmium-bearing or cadmium-coated base metals must be done using local exhaust ventilation or airline respirators unless atmospheric tests under the most adverse conditions show that employee exposure is within the acceptable concentrations specified by chapter 296-62 WAC. Such operations, when done outdoors, must be done using respirators, such as fume respirators, certified for this purpose by NIOSH under 42 CFR part 84.

(2) Confined space. Welding (brazing) involving cadmium-bearing filler metals shall be done using ventilation as prescribed in WAC 296-24-71505 or 296-24-71507 if the work is to be done in a confined space.

Note: See chapter 296-62 WAC for additional requirements on cadmium.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71517, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71517, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71517, filed 5/9/73 and Order 73-4, § 296-24-71517, filed 5/7/73.]

WAC 296-24-71519 Mercury. In confined spaces or indoors, welding or cutting operations involving metals coated with mercury-bearing materials, including paint, must be done using local exhaust ventilation or airline respirators unless atmospheric tests under the most adverse conditions show that employee exposure is within the acceptable concentrations specified by chapter 296-62 WAC. Such operations, when done outdoors, must be done using respirators certified for this purpose by NIOSH under 24 CFR part 84.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71519, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71519, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71519, filed 5/9/73 and Order 73-4, § 296-24-71519, filed 5/7/73.]

Chapter 296-30 WAC

RULES FOR THE ADMINISTRATION OF THE CRIME VICTIM COMPENSATION PROGRAM

WAC

296-30-020	Who is covered when a motor vehicle crime occurs?
296-30-025	Repealed.
296-30-060	Who does a victim report the crime to in order to meet reporting requirements?
296-30-081	Acceptance of rules and fees for medical and mental health services.
296-30-900	What law controls a claim if a statute is amended after the date of the criminal act?

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-30-025 Medical assistance eligibility. [Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-30-025, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 7.68.030, 7.68.070 (12) and (16) and 51.04.030. 89-23-004, § 296-30-025, filed 11/3/89, effective 11/10/89.] Repealed by 99-07-004, filed 3/4/99, effective 4/4/99.

WAC 296-30-020 Who is covered when a motor vehicle crime occurs? The Crime Victims Act covers injury or death in motor vehicle crimes covered by RCW 7.68.020 (2)(a). Anyone injured or killed in the accident is eligible for benefits.

[Statutory Authority: RCW 7.68.020 and 7.68.030. 99-07-004, § 296-30-020, filed 3/4/99, effective 4/4/99. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-020, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-020, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-020, filed 1/15/85.]

WAC 296-30-025 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-30-060 Who does a victim report the crime to in order to meet reporting requirements? The crime can be reported to any of the following:

- (1) Local law enforcement (city, county or state police agencies);
- (2) Federal police;
- (3) Indian tribal police;
- (4) Military police; or
- (5) Child protective services (CPS) when they have reported to local police.

[Statutory Authority: RCW 7.68.060 (1)(b) and 7.68.030. 99-07-004, § 296-30-060, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120. 97-02-090, § 296-30-060, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-060, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-060, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-060, filed 1/15/85.]

WAC 296-30-081 Acceptance of rules and fees for medical and mental health services. Providing medical or counseling services to an injured crime victim whose claim for crime victims compensation benefits has been accepted by the department constitutes acceptance of the department's medical aid rules and compliance with its rules and fees. Maximum allowable fees shall be those fees contained in the publications entitled *Medical Aid Rules and Fee Schedules and Crime Victims Compensation Program Mental Health Treatment Rules and Fees*, less any available benefits of public or private collateral resources, except as follows:

The percent of allowed charges authorized for hospital inpatient and outpatient services billed by revenue code are those rates established by the department of social and health services under Title 74 RCW and WAC 388-550-4500 (1)(a) and 388-550-6000 (1)(a).

If any of the maximum allowable fees in the publications entitled *Medical Aid Rules and Fee Schedules and Crime Victims Compensation Program Mental Health Treatment Rules and Fees* is lower than the maximum allowable fees for

those procedures established by the department of social and health services under Title 74 RCW, the Title 74 RCW fees are the maximum allowable fees for those procedures.

Prior to the establishment or amendment of the fee schedules, the department will give at least thirty calendar days notice by mail to interested persons who have made timely request for advance notice of the establishment or amendment of the fee schedules. To request advance notice of the establishment or amendment of the medical fee schedules, interested persons must contact the department at the following address:

Department of Labor and Industries
Health Services Analysis
P.O. Box 44322
Olympia, WA 98504-4322

To request advance notice of the establishment or amendment of the mental health fee schedules, interested persons must contact the department at the following address:

Department of Labor and Industries
Crime Victims Compensation Section
P.O. Box 44520
Olympia, WA 98504-4520

An injured victim shall not be billed for his or her accepted injury. The department shall be billed only after available benefits of public or private insurance have been determined. Bills must be submitted within ninety days from the date of service to be considered for payment. If insurance or public agency collateral resources exist, bills must be received within ninety days following payment or rejection by the resource. A copy of the payment or rejection must accompany the bill.

If the service provider has billed the injured victim and is later notified that the department has accepted the victim's claim, the provider shall refund to the injured victim any amounts paid, and bill the department for services rendered at their usual and customary fees if such rates are in excess of the public or private insurance entitlements.

On claims closed over ninety days, the department will pay for completion of a reopening application (Code 1041M), an office visit and diagnostic studies necessary to complete the application. No other benefits will be paid until the adjudication decision is rendered. When reopening is granted, the department can pay benefits for a period not to exceed sixty days prior to the date the reopening application is received by the department.

Providers outside of the state of Washington are subject to the same requirements, and are paid the same fees, as providers inside the state, with the exception of independent medical or mental health examinations, which will be paid at the examiner's usual customary fee.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.120, 51.36.010, 51.04.020 (1) and (4) and 51.04.030, 99-07-004, § 296-30-081, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-30-081, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, § 296-30-081, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-30-081, filed 12/23/93, effective 1/24/94; 92-23-034, § 296-30-081, filed 11/13/92, effective 12/14/92; 92-16-033, § 296-30-081, filed 7/30/92, effective 8/30/92; 86-01-028 (Order 85-37), § 296-30-081, filed 12/11/85.]

[2000 WAC Supp—page 948]

WAC 296-30-900 What law controls a claim if a statute is amended after the date of the criminal act? The statute in effect when the criminal act occurred is the controlling law. The act occurs when the perpetrator commits the criminal conduct.

[Statutory Authority: RCW 7.68.030, 99-07-004, § 296-30-900, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-30-900, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW, 85-03-060 (Order 85-3), § 296-30-900, filed 1/15/85.]

Chapter 296-31 WAC

CRIME VICTIMS COMPENSATION MENTAL HEALTH TREATMENT RULES AND FEES

WAC

296-31-010	What mental health treatment and services are available?
296-31-012	What mental health treatment and services are not authorized?
296-31-016	What treatment or services require authorization from the crime victims compensation program?
296-31-040	Can the department purchase or authorize a special service or treatment that does not appear in its fee schedule?
296-31-060	What reports are required from mental health providers?
296-31-065	Can my client be referred for a consultation?
296-31-067	When is concurrent treatment allowed?
296-31-068	When can a client transfer providers?
296-31-071	What records must providers maintain?
296-31-072	Are provider records subject to a health care services review or an audit?
296-31-073	Can the department enlist utilization review or management programs?
296-31-075	What is excess recovery?
296-31-080	How do providers bill for services?
296-31-085	Can out-of-state providers bill the department?
296-31-100	Repealed.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-31-100	Severability. [Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-100, filed 11/13/92, effective 12/14/92.] Repealed by 99-07-004, filed 3/4/99, effective 4/4/99.
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WAC 296-31-010 What mental health treatment and services are available? (1) The crime victims compensation program provides payment for mental health treatment and services to victims of crime who are eligible for compensation under chapter 7.68 RCW, the Crime Victims' Act.

EXCEPTION: Benefits under the crime victims compensation program are secondary to services available from any other public or private insurance.

(2) Services and treatment are limited to procedures that are:

- (a) Proper and necessary for the diagnoses of an accepted condition;
- (b) Available at the least cost;
- (c) Consistent with accepted standards of mental health care; and
- (d) Will enable the client to reach maximum recovery.

[Statutory Authority: 7.68.030, 7.68.130, 51.04.030 and 51.36.010, 99-20-031, § 296-31-010, filed 9/29/99, effective 11/1/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-31-010, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, §

296-31-010, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-010, filed 11/13/92, effective 12/14/92.]

WAC 296-31-012 What mental health treatment and services are not authorized? (1) The crime victims compensation program will not authorize services and treatment:

- (a) Beyond the point that the accepted condition becomes fixed and stable (i.e., maintenance care);
- (b) After the date a permanent partial disability award is made;
- (c) After a client is placed on a permanent pension roll, except as allowed in RCW 51.36.010;
- (d) After consultation and advice to the department, any treatment deemed to be dangerous or inappropriate; or
- (e) When treatment is defined as unnecessary or prohibited in WAC 296-31-020.

(2) We will not pay for services or treatment, including medications:

- (a) On rejected claims;

EXCEPTION: We will pay for assessments or diagnostic services used as a basis for the department's decision.

- (b) After the date a claim is closed.

EXCEPTION: Therapy for eligible survivors of victims of homicide can be provided on closed claims.

[Statutory Authority: RCW 7.68.030, 51.04.030 and 51.36.010. 99-20-031, § 296-31-012, filed 9/29/99, effective 11/1/99.]

WAC 296-31-016 What treatment or services require authorization from the crime victims compensation program? (1) The program must authorize the following mental health services and/or treatment:

- (a) Treatment beyond thirty sessions for adults or forty sessions for children;
- (b) Treatment beyond fifty sessions for adults or sixty sessions for children;
- (c) Consultations beyond what are allowed in WAC 296-31-065;
- (d) Inpatient hospitalization;
- (e) Concurrent treatment with more than one provider;
- (f) Electroconvulsive therapy;
- (g) Neuropsychological evaluation (testing);
- (h) Day treatment for seriously ill children under eighteen years old;
- (i) Referrals for services or treatment not in our fee schedule (see WAC 296-31-040).

(2) Your request for authorization must be in writing and include:

- (a) A statement of the condition(s) diagnosed;
- (b) Current DSM or ICD codes;
- (c) The relationship of the condition(s) diagnosed to the criminal act; and
- (d) An outline of the proposed treatment program that includes its length, components, procedure codes and expected prognosis.

[Statutory Authority: RCW 7.68.030 and 51.04.030. 99-20-031, § 296-31-016, filed 9/29/99, effective 11/1/99.]

WAC 296-31-040 Can the department purchase or authorize a special service or treatment that does not

appear in its fee schedule? (1) We may purchase and/or authorize agreements for service or treatment not covered in the fee schedule.

(2) The service or treatment must be provided by registered providers authorized to bill the department.

(3) We must establish payment rates for special agreements for service or treatment that we purchase or authorize.

(4) We may establish criteria to ensure each claimant receives quality and effective service or treatment that is provided at the least cost and is consistent with necessary services. Examples include, but are not limited to, outcome criteria, measures of effectiveness, minimum staffing levels, certification requirements, and special reporting requirements.

(5) We may terminate a special agreement by giving the provider thirty days **written** notice.

(6) Any request for a special agreement must be made in writing to the crime victims' compensation program.

[Statutory Authority: RCW 7.68.030, 99-07-004, § 296-31-040, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-040, filed 11/13/92, effective 12/14/92.]

WAC 296-31-060 What reports are required from mental health providers? The crime victims compensation program requires the following reports from mental health providers:

(1) **Initial response and assessment: Form I:** This report is required if you are seeing the client for **six sessions or less**, and must contain:

- (a) The client's initial description of the criminal act for which they have filed a crime victims compensation claim;
- (b) The client's presenting symptoms/issues by your observations and the client's report;
- (c) An estimate of time loss from work as a result of the crime injury, if any. Provide an estimate of when the individual will return to work, why they are unable to work, the extent of impairment and the prognosis for future occupational functioning; and
- (d) What type of intervention(s) you provided.

EXCEPTION: If you will be providing more than six sessions it is not necessary to complete Form I, instead complete Form II.

(2) **Initial response and assessment: Form II:** This report is required if **more than six sessions** are anticipated. Form II must be submitted no later than the sixth session, and must contain:

- (a) The client's initial description of the criminal act for which they have filed a crime victims compensation claim;
- (b) A summary of the essential features of the client's symptoms related to the criminal act, beliefs/attributions, vulnerabilities, defenses and/or resources that lead to your clinical impression (refer to current DSM and crime victims compensation program guidelines);
- (c) Any preexisting or coexisting emotional/behavioral or health conditions relevant to the crime impact if present, and how they may have been exacerbated by the crime victimization;

(d) Specific diagnoses with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(e) Treatment plan based on diagnoses and related symptoms, to include:

- (i) Specific treatment goals you and the client have set;
- (ii) Treatment strategies to achieve the goals;
- (iii) How you will measure progress toward the goals;

and

(iv) Any auxiliary care that will be incorporated.

(f) A description of your assessment of the client's treatment prognosis, as well as any extenuating circumstances and/or barriers that might affect treatment progress; and

(g) An estimate of time loss from work as a result of the crime injury, if any. Provide an estimate of when the individual will return to work, why they are unable to work, the extent of impairment and the prognosis for future occupational functioning.

(3) **Progress note: Form III:** This report must be completed **after session fifteen has been conducted**, and must contain:

(a) Whether there has been substantial progress towards recovery for the crime related condition(s);

(b) If you expect treatment will be completed within thirty visits (for adults) or forty visits (for children); and

(c) What complicating or confounding issues are hindering recovery.

(4) **Treatment report: Form IV:** This report must be completed for authorization for **treatment beyond thirty sessions for adults or forty sessions for children**, and must contain:

(a) The diagnoses at treatment onset with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(b) The current diagnoses, if different now, with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year; and

(c) Proposed plan for treatment and number of sessions requested, and an explanation of:

- (i) Substantial progress toward treatment goals;
- (ii) Partial progress toward treatment goals; or
- (iii) Little or no progress toward treatment goals.

(5) **Treatment report: Form V:** This report must be completed for authorization for **treatment beyond fifty sessions for adults or sixty sessions for children**, and must contain:

(a) The diagnoses at treatment onset with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(b) The current diagnoses, if different now, with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(c) Proposed plan for treatment and number of sessions requested, and an explanation of:

- (i) Substantial progress toward treatment goals;
- (ii) Partial progress toward treatment goals; or
- (iii) Little or no progress toward treatment goals.

(6) **Termination report: Form VI:** If you **discontinue treatment of a client** for any reason, a termination report

should be completed within sixty days of the client's last visit, and must contain:

(a) Date of last session;

(b) Diagnosis at the time client stopped treatment;

(c) Reason for termination (e.g., goals achieved, client terminated treatment, client relocated, referred to other services, etc.); and

(d) At this point in time do you believe there is any permanent loss in functioning as a result of the crime injury? If yes, describe symptoms based on diagnostic criteria for a DSM diagnosis.

(7) **Reopening application:** This application is **required to reopen a claim** that has been closed more than ninety days, to demonstrate a worsening of the client's condition and a need for treatment. We will reimburse you for filing the application, for an office visit, and diagnostic studies needed to complete the application. No other benefits will be paid until a decision is made on the reopening. If the claim is reopened, we will pay benefits for a maximum of sixty days prior to the date we received the reopening application.

[Statutory Authority: RCW 7.68.030, 51.04.030 and 51.36.060, 99-20-031, § 296-31-060, filed 9/29/99, effective 11/1/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, § 296-31-060, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-31-060, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-060, filed 11/13/92, effective 12/14/92.]

WAC 296-31-065 Can my client be referred for a consultation? (1) There may be instances when the client's accepted mental health condition presents a diagnostic or therapeutic challenge. In such cases, you or the department may refer the client for a consultation or you may ask the department for an independent mental health examination.

(2) There are two levels of consultations that can be performed: Limited and extensive. Descriptions and procedure codes are included in the *Crime Victims Compensation Program Mental Health Treatment Rules and Fees*.

(3) The consultant will be required to submit a report to the department that contains the following elements:

- (a) The reason(s) for the consultation referral; and
- (b) Consultants related recommendations.

(4) Authorization from the department is required for:

- (a) More than two consultations before the thirtieth session for adults or fortieth session for children; and
- (b) More than one consultation between thirty and fifty sessions for adults or between forty and sixty sessions for children.

(5) You may **not** make a referral for a consultation if:

- (a) An independent mental health examination has been scheduled;
- (b) Claim reopening is pending; or
- (c) The claim is closed.

Note: The consultant must meet provider registration requirements per WAC 296-31-030.

[Statutory Authority: RCW 7.68.030 and 51.04.030, 99-20-031, § 296-31-065, filed 9/29/99, effective 11/1/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, § 296-31-065, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-31-065, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-065, filed 11/13/92, effective 12/14/92.]

WAC 296-31-067 When is concurrent treatment allowed? (1) In some cases, treatment by more than one provider may be allowed by the crime victims compensation program. We may authorize concurrent treatment on an individual basis:

(a) If the accepted condition requires specialty or multi-disciplinary care.

Note: Individual and group counseling sessions given by more than one provider is not concurrent treatment.

(b) If we receive and approve your written request that contains:

(i) The name, address, discipline, and specialty of each provider requested to assist in treating the client;

(ii) An outline of each provider's responsibility in the case; and

(iii) An estimated length for the period of concurrent treatment.

(2) If we approve concurrent treatment, we will recognize one primary attending mental health treatment provider. That provider will be responsible for:

(a) Directing the overall treatment program for the client;

(b) Providing us with copies of all reports received from involved providers; and

(c) In time loss cases, providing us with adequate evidence certifying the claimant's inability to work.

[Statutory Authority: RCW 7.68.030 and 51.04.030. 99-20-031, § 296-31-067, filed 9/29/99, effective 11/1/99.]

WAC 296-31-068 When can a client transfer providers? (1) RCW 51.36.010 provides that clients are entitled to a free choice of attending providers, subject to the limits of RCW 7.68.130 and the requirements of the claimant's public or private insurance. The provider must meet registration requirements of WAC 296-31-030.

(2) The department must be notified if a client changes providers.

(3) We may require a client to select another provider for treatment under the following conditions:

(a) When a provider, qualified and available to provide treatment, is more conveniently located;

(b) When the attending provider fails to comply with our rules;

(c) Subject to the limits of RCW 7.68.130 outlined in subsection (1) of this section.

[Statutory Authority: RCW 7.68.030, 7.68.130 and 51.36.010. 99-20-031, § 296-31-068, filed 9/29/99, effective 11/1/99.]

WAC 296-31-071 What records must providers maintain? If providers request payment from us for service, they must:

(1) Maintain all patient and billing records needed to:

(a) Determine the extent of services provided to claimants or to their family members. Each record must, at a minimum:

(i) Document the level and type of service provided; and

(ii) Where applicable, indicate the name of our representative who authorized equipment or treatment.

(b) Comply with our audit of services, if an audit is authorized.

(2) Maintain records for audit purposes for at least five years from the claimant's last treatment date.

(3) Provide records to us, if requested.

Note: The confidentiality (safeguarding and release) of a claimant's records is governed by RCW 7.68.140 and 7.68.145 of the Crime Victims Act.

[Statutory Authority: RCW 7.68.030, 51.04.020(4) and 51.04.030. 99-07-004, § 296-31-071, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-071, filed 11/13/92, effective 12/14/92.]

WAC 296-31-072 Are provider records subject to a health care services review or an audit? (1) We may review or audit patient and related billing records to ensure:

(a) Claimants are receiving proper and necessary care; and

(b) You are complying with our mental health rules, fee schedules, and policies.

A records review can become the basis of corrective action against you.

(2) We may review your records:

(a) Before, during or after delivery of services;

(b) For cause or at random;

(c) Using statistical sampling methods and projections based on sample findings; and

(d) At or away from your place(s) of business.

(3) We must provide you with ten working days written notice that our auditors intend to review your patient and related billing records at your place(s) of business.

(4) We will not remove original records from your place of business, but we may request copies of your records. If copies are requested, they must be legible and provided to us within thirty calendar days of receiving our request.

[Statutory Authority: RCW 7.68.030, 51.04.020(4) and 51.04.030. 99-07-004, § 296-31-072, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-072, filed 11/13/92, effective 12/14/92.]

WAC 296-31-073 Can the department enlist utilization review or management programs? As a trustee of funds appropriated by the legislature, we have a duty to supervise the provisions of proper and necessary mental health care. We may enlist utilization review or management programs to monitor and control the delivery, use, and cost of necessary mental health care services. Examples include, but are not limited to, managed care contracting, prior authorization of services, and alternative reimbursement systems.

[Statutory Authority: RCW 7.68.030, 51.04.020(4) and 51.04.030. 99-07-004, § 296-31-073, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-073, filed 11/13/92, effective 12/14/92.]

WAC 296-31-075 What is excess recovery? The remaining balance of a recovery, which is paid to the victim but must be used to offset future payment of benefits.

How does excess effect the bill payment process?

(1) When an excess recovery exists, the department is not responsible for payment of bills.

(2) The provider must bill the department in accordance with the department's medical aid rules and maximum fee schedules.

(3) The department will:

- (a) Determine the amount payable according to the fee schedule;
- (b) Credit the excess recovery with the amount payable; and
- (c) Send the provider a remittance advice showing the amount due from the victim.
- (4) The victim must pay the provider in accordance with the remittance advice.
- (5) When the excess is reduced to zero the department will resume responsibility for payment of bills.

[Statutory Authority: RCW 7.68.030, 7.68.050 and 7.68.130. 99-07-004, § 296-31-075, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-075, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-075, filed 11/13/92, effective 12/14/92.]

WAC 296-31-080 How do providers bill for services?

(1) Neither the department nor the claimant is required to pay for provider services which violate the mental health treatment rules, fee schedule or department policy.

(2) All fees listed are the maximum fees allowable. Providers must bill their usual and customary fee for each service. If this is less than our fee schedule rate, you must bill us at the lesser rate. The department will pay the lesser of the billed charge or the fee schedule's maximum allowable.

The provider is prohibited from charging the claimant for any difference between the provider's charge and our allowable amount.

(3) Regardless of who completes the bill form, you are responsible for the completeness and accuracy of the description of services and of the charges billed.

(4) All bills submitted to the department must:

- (a) Be itemized on forms approved by us.

For example: Physicians, psychologists, advanced registered nurse practitioners and master level mental health counselors may use our form or the national standard HCFA 1500 health insurance claim form. Hospitals use the UB 92 billing form for institution services and the national standard HCFA 1500 health insurance claim form for professional services.

(b) Refer to the crime victims compensation program mental health treatment rules and fees booklet for procedure code listings and detailed billing instructions. Billings must be submitted in accordance with this publication.

(5) The following supporting documentation must be maintained and, if applicable, submitted when billing for services:

- (a) Intake evaluation;
- (b) Progress reports;
- (c) Consultation reports;
- (d) Special or diagnostic study reports;
- (e) Independent assessment or closing exam reports;
- (f) BR (by report) describing why a service or procedure is too unusual, variable, or complex to be assigned a value unit;
- (g) The claimant's or patient's (if patient is other than claimant) private or public insurance information;

For example: When services provided are for survivors of homicide victims.

(6) The claim number must appear in the appropriate field on each bill form. Reports and other correspondence

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must have the claim number in the upper right hand corner of each page.

(7) You may rebill us if your bill is not reported on your remittance advice within sixty days. Unless the information on the original bill was incorrect, a rebill should be identical. Rebills must be submitted for services denied if a claim is closed or rejected and subsequently reopened or allowed.

(8) We will adjust charges when appropriate. We must provide you with a written explanation as to why a billing was adjusted. A written explanation is not required if the adjustment was made solely to conform to our maximum allowable fees. Any inquiries regarding adjustment of charges must be received in the required format within ninety days from the date of payment.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.120, 51.36.010, 51.04.020 (1) and (4) and 51.04.030. 99-07-004, § 296-31-080, filed 3/4/99, effective 4/4/99; 97-02-090, § 296-31-080, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-080, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-31-080, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-080, filed 11/13/92, effective 12/14/92.]

WAC 296-31-085 Can out-of-state providers bill the department? (1) Providers of mental health diagnostic and treatment services located outside the state of Washington:

(a) May bill us for services that we allow and are authorized by the crime victims compensation program mental health treatment rules;

(b) Must bill us according to the provisions of this chapter;

(c) Must bill their usual and customary fees; and

(d) Will be paid according to the Washington state crime victims compensation program mental health treatment rules and fees.

Exception: Hospitals located outside the state of Washington are paid according to WAC 296-30-081.

(2) Independent medical or mental health examinations must be billed and will be paid according to the examiner's usual and customary fee.

(3) We will not reimburse a charge for service(s) allowed under any out-of-state crime victims compensation program unless it is allowed in chapters 296-30 and 296-31 WAC. When in doubt, the provider should contact us to verify coverage.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.120, 51.36.010, 51.04.020 (1) and (4) and 51.04.030. 99-07-004, § 296-31-085, filed 3/4/99, effective 4/4/99.]

WAC 296-31-100 Repealed. See Disposition Table at beginning of this chapter.

Chapter 296-32 WAC SAFETY STANDARDS FOR TELECOMMUNICATIONS

WAC

296-32-260

Rubber insulating equipment.

WAC 296-32-260 Rubber insulating equipment. (1) Rubber insulating equipment designed for the voltage levels

to be encountered shall be provided and the employer shall ensure that they are used by employees as required by this section. The requirements of WAC 296-24-092, Electrical protective equipment, shall be followed except for Table A-6.

(2) The employer is responsible for periodic retesting of all insulating gloves, blankets, and other rubber insulating equipment. This retesting shall be electrical, visual and mechanical. The following maximum retesting intervals shall apply:

Gloves, Blankets, and Other Insulating Equipment	Natural Rubber (Months)	Synthetic Rubber (Months)
New	12	18
Reissued	9	15

(3) Protector for gloves. Approved protectors must be worn at all times over rubber gloves. Inner liners may be worn if desired.

(4) Gloves and blankets shall be marked to indicate compliance with the retest schedule and shall be marked with the date the next test date is due.

Any rubber gloves found to be defective shall be removed from service and marked as being defective.

(5) Patching rubber goods is prohibited; rubber protective equipment shall not be vulcanized or patched.

(6) Rubber gloves for workers. A pair of rubber gloves, specifically designed for the protection of workers, shall be assigned each worker when required to work on or be exposed to energized parts.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-32-260, filed 8/17/99, effective 12/1/99; Order 76-38, § 296-32-260, filed 12/30/76; Order 75-41, § 296-32-260, filed 12/19/75.]

Chapter 296-36 WAC

SAFETY STANDARDS—COMPRESSED AIR WORK

WAC

296-36-210

Medical supervision and medical and first-aid facilities—Medical supervision.

WAC 296-36-210 Medical supervision and medical and first-aid facilities—Medical supervision. (1) Appointed physician.

Where workmen are employed in compressed air, their employer shall make arrangements for their medical supervision by one or more licensed physicians trained in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. The employer shall arrange for medical examination of all workmen employed in compressed air at a suitable place or places by the appointed physician in accordance with these regulations. The appointed physician or physicians shall be immediately available in case of emergency or accident. Each appointed physician shall be physically qualified to subject himself to a compressed air environment.

(2) Appointed physician's duties and responsibilities.

(a) General. All matters on the job pertaining to the health of employees, treatment on the job of illness and injuries, special first-aid and nursing personnel or assistants, lock attendants, and medical and first-aid equipment shall be under the supervision of the appointed physician.

(b) He shall make all required physical examinations.

(c) He shall make and sign all required reports of such examinations using the forms provided by the department of labor and industries.

(d) He shall make at least one inspection on the job every day of all treatment records and the required decompression record and he shall inspect or inquire into conditions which may constitute a potential hazard to the health of any employee.

(3) **Certified medical attendant.** There shall be on every job a certified medical attendant trained to the satisfaction of the appointed physician in administering first aid on compressed air jobs, and who shall be in attendance in the first-aid room while work in compressed air is going on and at such other times as the physician may direct. The medical attendant shall be in personal charge of the administration of first aid and such other duties as physician may direct. Under no circumstances shall female medical attendants be subjected to a compressed air environment.

(4) First-aid personnel.

(a) The superintendent and every foreman and at least one additional designated person on each shift below ground shall be trained to the satisfaction of the appointed physician in administering first aid.

(b) Where more than 10 but less than 50 men are employed per shift underground, there shall be at least 2 such additional designated trained persons on the job and available on call.

(c) Where more than 50 men are employed per shift underground, the designated trained personnel shall include all shift bosses and time keepers in addition to those required in subsection (b) above.

(d) All designated first-aid personnel must have in their possession current first-aid certificates that meet certificate requirements stated in chapter 296-24 WAC, Part A-1.

(5) **First-aid meetings.** All designated first-aid personnel shall meet at least once in each 3 months or oftener if directed by the physician for further first-aid instruction by the physician.

(6) **First-aid room and equipment.** The employer must provide a first-aid room properly heated and maintained within 100 yards of the principal entrance to the underground work. It must be equipped with a first-aid kit, medical supplies and equipment consisting of not less than the minimum requirements listed in chapter 296-24 WAC, Part A-1.

(7) **First-aid equipment underground.** All the equipment and supplies which the appointed physician may deem necessary for first-aid underground shall be provided and maintained readily available in a suitable cabinet or cabinets. A list of the contents signed by the appointed physician shall be permanently attached to the inside of the cabinet door or cover. The cabinet shall be plainly marked with a red cross and the words "first aid."

In caissons, one such cabinet shall be conveniently located in the working chamber.

In tunnels where a bulkhead is installed, one such cabinet shall be located on each side of the bulkhead near the entrance to the man lock.

In tunnels having no bulkhead, one such cabinet shall be located within 100 yards of the working face.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-36-210, filed 12/7/99, effective 2/1/00. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-36-210, filed 8/13/90, effective 9/24/90; Rules (Part XIX A), filed 12/28/62; § 23, filed 3/23/60.]

Chapter 296-45 WAC
SAFETY STANDARDS FOR ELECTRICAL
WORKERS

WAC

296-45-015	Scope and application.
296-45-045	NESC applicable.
296-45-17550	Group lockout/tagout.
296-45-215	Underground electrical installations.
296-45-325	Working on or near exposed energized parts.
296-45-455	Line-clearance tree-trimming operations.
296-45-901	Appendix A—Nonmandatory.

WAC 296-45-015 Scope and application. (1) This chapter covers the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. These provisions apply to:

(a) Power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering, which are accessible only to qualified employees;

Note: The types of installations covered by this chapter include the generation, transmission, and distribution installations of electric utilities, as well as equivalent installations of industrial establishments. Trolley maintenance, jumpering, and bypass is also covered by this chapter. Supplementary electric generating equipment that is used to supply a workplace for emergency, standby, or similar purposes only is covered under Part L of chapter 296-24 WAC.

(b) Other installations at an electric power generating station, as follows:

(i) Fuel and ash handling and processing installations, such as coal conveyors;

(ii) Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators; and

(iii) Chlorine and hydrogen systems.

(c) Test sites where electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution is performed in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work;

(d) Work on or directly associated with the installations covered in subsections (1)(a) through (c) of this section; and

(e) Line-clearance tree-trimming operations, as follows:

(i) This chapter except WAC 296-45-455, applies to line-clearance tree-trimming operations performed by qualified employees (those who are knowledgeable in the construction and operation of electric power generation, transmission, or distribution equipment involved, along with the associated hazards).

(ii) WAC 296-45-065, 296-45-125, 296-45-135, 296-45-255, 296-45-315, 296-45-375, and 296-45-455 through 296-45-45530 apply to line-clearance tree-trimming operations performed by line-clearance tree trimmers who are not qualified employees.

(2) Notwithstanding subsection (1) of this section, this chapter does not apply to electrical installations, electrical

safety-related work practices, or electrical maintenance considerations covered by Part L of chapter 296-24 WAC.

Note 1: Work practices conforming to WAC 296-24-970 through 296-24-985 are considered as complying with the electrical safety-related work practice requirements of this chapter, provided the work is being performed on a generation or distribution installation meeting WAC 296-24-95601 through 296-24-95699. This chapter also applies to work by qualified persons directly on or associated with installations of electric power generation, transmission, and distribution lines or equipment, regardless of compliance with WAC 296-24-970 through 296-24-985.

Note 2: Work practices performed by qualified persons and conforming to this chapter are considered as complying with WAC 296-24-95601 through 296-24-95699.

(3) This section applies in addition to all other applicable safety and health standards administered by the department. Specific references in this section to other standards are provided for emphasis only.

(4) Operation, conditions, work methods and other work related situations or activities not specifically covered by this chapter are subject to the rules and regulations of chapter 296-24 WAC, General safety and health standards; chapter 296-62 WAC, General occupational health standards; chapter 296-155 WAC, Safety standards for construction work; and, insofar as applicable to employee safety and health, chapter 19.29 RCW. Additionally, operations, conditions, work methods and other work related situations or activities may be subject to additional rules and regulations depending upon the nature of the work being performed.

(5) These rules shall not apply to the use of existing electrical installations during their lifetime, provided they are maintained in good condition and in accordance with the applicable safety factor requirements and the rules in effect at the time they were installed, and provided that reconstruction shall conform to the rules as herein provided.

(6) Any rule, regulation or standard contained within this chapter, if subject to interpretation, shall be interpreted so as to achieve employee safety, which is the ultimate purpose of this chapter.

(7) Should a rule or standard contained within this chapter conflict, in any manner, with a standard or rule contained within any other chapter of Title 296 WAC the standard or rule contained herein shall apply so long as the work being done is power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering, which are accessible only to qualified employees. If there are rules within this chapter that conflict, the rule that provides the greatest employee safety will apply.

(8) Neither the promulgation of these rules, nor anything contained in these rules shall be construed as affecting the relative status or civil rights or liabilities between employers and their employees and/or the employees of others and/or the public generally; nor shall the use herein of the words "duty" and "responsibility" or either, import or imply liability other than provided for in the industrial insurance and safety laws of the state of Washington, to any person for injuries due to negligence predicated upon failure to perform or discharge any such "duty" or "responsibility," but failure on the part of the employees, leadworker, or employer to comply with any compulsory rule may be cause for the department of labor

and industries to take action in accordance with the industrial insurance and safety laws.

(9) "Shall" and "must" as used in this chapter make the provisions mandatory. "Should," "may," or "it is recommended" are used to indicate the provisions are not mandatory but are recommended.

(10) If any section, subsection, phrase, or provisions of this chapter or part thereof should be held invalid by any court for any reason, such invalidity shall not in any way affect the validity of the remainder of this chapter, unless such decision renders the remainder of the provision unintelligible, or changes the meaning of such other provision or provisions.

(11) When the language used in this chapter indicates that it is the responsibility, duty, or obligation of the leadworker or other employee, it shall also be the employer's responsibility, obligation, and duty.

Whenever this chapter refers to the provisions of another safety and health standard or statute affecting safety and health, such reference refers to the statute or code in effect at the time the work is being performed.

[Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-015, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-015, filed 3/6/98, effective 5/6/98.]

WAC 296-45-045 NESC applicable. (1) All electric utilities and entities operating transmission and distribution facilities within the state of Washington must design, construct, operate, and maintain their lines and equipment according to the requirements of the 1997 National Electrical Safety Code (NESC) (ANSI-C2), parts (1), (2), and (3).

Note: The department has copies of the NESC available for review at each service location across the state. To purchase a copy, write to:
The Institute of Electrical and Electronics Engineers, Inc.
345 East 47th Street
New York, NY 10017-2394

(2) The employer must ensure that climbing space is provided on all poles and structures. The climbing space must meet the requirements of the 1997 National Electrical Safety Code (NESC) (ANSI-C2), except that Rule 236H does not apply.

[Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-045, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-045, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17550 Group lockout/tagout. When servicing or maintenance is performed by a crew, craft, department, or other group, they shall use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. Group lockout or tagout devices shall be used in accordance with the procedures required by the following specific requirements:

(1) Primary responsibility shall be vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);

(2) Provision shall be made for the authorized employee to ascertain the exposure status of all individual group members with regard to the lockout or tagout of the machine or equipment;

(3) When more than one crew, craft, department, or other group is involved, assignment of overall job-associated lockout or tagout control responsibility shall be given to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(4) Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

[Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-17550, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17550, filed 3/6/98, effective 5/6/98.]

WAC 296-45-215 Underground electrical installations. This section provides additional requirements for work on underground electrical installations.

(1) Protective barriers, or approved guards and warning signs must be erected before removing manhole covers or making excavations in places accessible to vehicular or pedestrian traffic.

(2) Whenever an opening is made in the street, it shall be properly guarded or covered until same is closed and whenever an obstruction is left in the roadway after dark, it shall be marked with approved lights, flares or similar devices.

(3) Access. A ladder or other climbing device shall be used to enter and exit a manhole or subsurface vault exceeding 4 feet (122 cm) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.

(4) When work is to be performed in a manhole or unvented vault:

(a) No entry shall be permitted unless the atmosphere is found to be safe by testing for the presence of explosive or potentially hazardous gases or fumes.

(b) No entry shall be permitted unless the atmosphere has been found safe by testing for oxygen deficiency or forced ventilation is provided.

(c) When unsafe conditions are detected, by testing or other means, the work area shall be ventilated and otherwise made safe before entry.

(d) Provisions shall be made for a continuous supply of air as provided for in Part L, chapter 296-62 WAC.

(e) When forced ventilation is not used a method of monitoring said manhole or vault so as to prevent the occurrence of oxygen deficiency due to work being performed in said manhole or vault, and to detect the presence of any explosive gases or fumes which may occur while the employees are working in said manhole or vault.

(5) When open flames are used or smoking is permitted in manholes, adequate mechanical forced air ventilation shall be used.

(6) Before using open flames in a manhole or excavation in an area where combustible gases or liquids may be present, such as near a gasoline service station, the atmosphere of the

manhole or excavation shall be tested and found safe or cleared of the combustible gases or liquids prior to the entry.

(7) When work is to be performed in manholes containing any wires or appliances carrying electrical current, they shall be in a sanitary condition.

(8) Care shall be taken to prevent the possibility of vehicles or pedestrians coming in contact with the wires and equipment.

(9) Lowering equipment into manholes. Equipment used to lower materials and tools into manholes or vaults shall be capable of supporting the weight to be lowered and shall be checked for defects before use. Before tools or materials are lowered into the opening for a manhole or vault, each employee working in the manhole or vault shall be clear of the area directly under the opening.

(10) Materials shall not be thrown into or out of manholes but shall be placed in the proper receptacle and hoisted in and out by means of a rope.

(11) Tools and materials shall not be left on the ground around or near the manhole opening where they might be pushed or otherwise fall into the hole.

(12) Attendants for manholes.

(a) An attendant shall be kept at the surface when there is any hazard to the employees in the manhole and the attendant should not leave the manhole unwatched until such time as all employees are out and the cover has been replaced.

(b) While work is being performed in a manhole containing energized electric equipment, an employee with first aid and CPR training meeting WAC 296-45-125(1) shall be available on the surface in the immediate vicinity to render emergency assistance.

Note 1: An attendant may also be required under WAC 296-45-205(7). One person may serve to fulfill both requirements. However, attendants required under WAC 296-45-205(7) are not permitted to enter the manhole.

Note 2: Employees entering manholes containing unguarded, un-insulated energized lines or parts of electric equipment operating at 50 volts or more are required to be qualified under WAC 296-45-325(1) through (4).

(c) No work shall be permitted to be done in any manhole or subway on any energized wire, cable or appliance carrying more than 300 volts of electricity by less than two qualified persons who shall at all times, while performing such work, be in the same manhole or subway in which work is being done. This rule shall not apply to work on telephone, telegraph or signal wires or cables.

(d) For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole where energized cables or equipment are in service, if the employer can demonstrate that the employee will be protected from all electrical hazards.

(e) Reliable communications, through two-way radios or other equivalent means, shall be maintained among all employees involved in the job.

(13) Cable in manholes or underground vaults shall be accessible to employees and a clear working space shall be maintained at all times; and/or approved protective guards, barriers, etc., when installed shall be considered as providing adequate working clearance for cables over 5 k.v. If a manhole and/or underground vault is determined to have an elec-

trical or structural hazard, no work shall be done in the manhole and/or vault until the unsafe condition is corrected or de-energized.

(14) No work shall be performed on cables or equipment unless they have been properly identified by an approved method.

(15) Duct rods. If duct rods are used, they shall be installed in the direction presenting the least hazard to employees. An employee shall be stationed at the far end of the duct line being rodded to ensure that the required minimum approach distances are maintained.

(16) Multiple cables. When multiple cables are present in a work area, the cable to be worked shall be identified by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked shall be protected from damage.

(17) Before cutting into a high voltage cable or opening a high voltage splice, the cable shall be de-energized then clearance obtained, tested and then grounded in an approved manner. The cable to be worked on shall be identified by tags or equivalent means.

(18) Moving cables. Energized cables that are to be moved shall be inspected for defects.

(19) Insulated platforms or other protective devices shall be provided when work is to be done on energized wires or equipment in manholes.

(20) Furnaces shall always be placed in a secure, level position on the downhill side of the manhole to avoid spillage of hot metals or compounds into the manhole.

(21) Pulling underground cable. When pulling cable(s) all employees shall be made aware of the hazard of being caught in the sheaves, lashings or winch gears. All employees shall stand clear of the pulling line when the pull is begun or when the line is under tension. This rule applies to all work performed by means of a winch.

(22) Fishing conduit or ducts. When fishing conduit or ducts, it shall first be determined that the fish tape or wires will not contact any energized line or equipment.

(23) WAC 296-45-335 on clearances shall be complied with. Also WAC 296-45-345 and/or WAC 296-45-355 on grounding shall be complied with.

(24) Defective cables. Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, the defective cable shall be de-energized before any employee may work in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint.

Note: Abnormalities such as oil or compound leaking from cables or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be an indication of an impending fault.

(25) Sheath continuity. When work is performed on buried cable or on cable in manholes, metallic sheath continuity shall be maintained by bonding across the opening (or by

equivalent means), or the cable sheath shall be treated as energized.

[Statutory Authority: RCW 49.17.040, 99-09-080, § 296-45-215, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060, 98-07-009, § 296-45-215, filed 3/6/98, effective 5/6/98.]

WAC 296-45-325 Working on or near exposed energized parts. This section applies to work on exposed live parts, or near enough to them, to expose the employee to any hazard they present.

(1) General. Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. Electric lines and equipment shall be considered and treated as energized unless the provisions of WAC 296-45-175 through 296-45-17565 or 296-45-335 have been followed.

(2) Except as provided in subsection (3) of this section, at least two qualified employees shall be present while the following types of work are being performed:

(a) Installation, removal, or repair of lines that are energized at more than 600 volts;

(b) Installation, removal, or repair of de-energized lines if an employee is exposed to contact with other parts energized at more than 600 volts;

(c) Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts;

(d) Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts; and

(e) Other work that exposes an employee to electrical hazards greater than or equal to those posed by operations that are specifically listed in subsection (2)(a) through (e) of this section.

Note 1: One employee shall serve principally as a standby person who shall be so located that they may physically reach the other employee in the event of an accident either with their hand or with a hot stick. The stand-by shall be so positioned as to be able to observe the other employee, their bodily movements, and verbally warn of any impending dangers. In no case when working in pairs shall employees work simultaneously on energized wires or parts of different phases or polarity;

Note 2: In cases of necessity the stand-by person may temporarily assist the other employee provided that they both work on wires or parts of the same phase or polarity. Both employees shall so position themselves so that the presence of the second person does not increase the hazard.

(3) The provisions of WAC 296-45-325(2) do not apply in the following circumstances:

(a) When re-fusing circuits or equipment with a hot stick.

(b) When operating switches by means of operating handle or switch sticks.

(c) When installing or removing a hot line clamp connection with an approved hot stick on single phase line or apparatus, providing that the connection or disconnection does not interrupt or pick up a load.

(d) When installing or removing by hot stick simple load metering devices provided the connection does not interrupt or pickup load.

(e) Emergency repairs to the extent necessary to safeguard the general public.

(4) "Minimum approach distances." The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than set forth in Table 1 through Table 4, unless:

The employee is insulated from the energized part (insulating gloves or insulating gloves and sleeves worn in accordance with subsection (7) of this section are considered insulation of the employee only with regard to the energized part upon which work is being performed); or

The energized part is insulated from the employee and from any other conductive object at a different potential.

Note 1: WAC 296-45-475 (5)(a) and 296-45-48525(1) contain requirements for the guarding and isolation of live parts. Parts of electric circuits that meet these two provisions are not considered as "exposed" unless a guard is removed or an employee enters the space intended to provide isolation from the live parts.

Note 2: When an employee is required to work on or within reach of any unprotected conductors that are or may become energized at more than 50 volts and less than 600 volts between phases, they shall take the following precautions:

1: They shall wear approved insulating gloves or insulating gloves and sleeves during the time they are working on such conductor, or

2: They shall cover, with approved devices, any adjacent unprotected conductor that could be touched by any part of their body, and use insulated tools.

3: Cables which are properly insulated for the voltages to which they are energized, shall be considered as an effective barrier to protect the employees and Table 1 need not apply.

(5) Initial determination.

(a) Before any work is performed, the location of energized lines and their condition, the location and condition of energized equipment, the condition of the poles, the location of circuits and equipment including power communication lines, CATV and fire alarm circuits, shall be determined as shall any other particular hazard of a particular work site.

(b) No work shall be performed on energized lines or parts until the voltage of such equipment and lines is determined.

(6) Type of insulation. If the employee is to be insulated from energized parts by the use of insulating gloves (under subsection (4)(a) of this section), insulating sleeves shall also be used. However, insulating sleeves need not be used under the following conditions:

(a) If exposed energized parts on which work is not being performed are insulated from the employee; and

(b) If such insulation is placed from a position not exposing the employee's upper arm to contact with other energized parts.

(7) Working position. The employer shall ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee.

(8) Making connections. The employer shall ensure that connections are made as follows:

(a) In connecting de-energized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the de-energized part;

(b) When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first; and

(c) When lines or equipment are connected to or disconnected from energized circuits, loose conductors shall be kept away from exposed energized parts.

(9) Rubber gloves can only be used on 5,000 volts or less between phases.

(10) It shall not be permissible to consider one part of a high voltage switch or disconnect as de-energized for the purpose of doing work on it if the remainder of the switch or disconnect remains energized unless approved barriers are erected which will prevent employees who are doing the work on such equipment from coming in direct contact with the energized parts.

(11) Conductor support tools such as link sticks, strain carriers, and insulator cradles may be used: Provided, That the clear insulation is at least as long as the insulator string or the minimum distance specified in Table 1 for the operating voltage.

(12) Apparel.

(a) When work is performed within reaching distance of exposed energized parts of equipment, the employer shall ensure that each employee removes or renders nonconductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.

(b) The employer shall train each employee who is exposed to the hazards of flames or electric arcs in the hazards involved.

(c) The employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing that, when exposed to flames or electric arcs, could increase the extent of injury that would be sustained by the employee.

Note: Clothing made from the following types of fabrics, either alone or in blends, is prohibited by this subsection, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that the clothing is worn in such a manner as to eliminate the hazard involved: Acetate, nylon, polyester, rayon.

(d) Workers shall wear clothing appropriate to the season and the kind of work being performed. Shirts or jumpers must have full length sleeves that are rolled down. Protective hard hats and eye protection shall be worn when working on or near live parts or while climbing poles.

(13) Fuse handling. When fuses must be installed or removed with one or both terminals energized at more than 300 volts or with exposed parts energized at more than 50 volts, the employer shall ensure that tools or gloves rated for the voltage are used. When expulsion-type fuses are installed with one or both terminals energized at more than 300 volts, the employer shall ensure that each employee wears eye protection meeting the requirements of WAC 296-45-25505(1), uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.

(14) Covered (noninsulated) conductors. The requirements of this section which pertain to the hazards of exposed live parts also apply when work is performed in the proximity of covered (noninsulated) wires.

(15) Noncurrent-carrying metal parts. Noncurrent-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, shall be treated as energized at the highest voltage to which they are exposed, unless the employer inspects the installation and determines that these parts are grounded before work is performed.

(16) Opening circuits under load. Devices used to open circuits under load conditions shall be designed to interrupt the current involved.

Table 1: AC Live Work Minimum Approach Distance
Distance to employee

Voltage in kilovolts phase to phase*	Phase to ground		Phase to Phase	
	(m)	(ft-in)	(m)	(ft-in)
0 to 0.050	not specified		not specified	
0.051 to 0.300	avoid contact		avoid contact	
0.301 to 0.750	0.31	1-0	0.31	1-0
0.751 to 15	0.65	2-2	0.67	2-3
15.1 to 36.0	0.77	2-7	0.86	2-10
36.1 to 46.0	0.84	2-9	0.96	3-2
46.1 to 72.5	1.00**	3-3**	1.20	3-11
72.6 to 121	0.95**	3-2**	1.29	4-3
138 to 145	1.09	3-7	1.50	4-11
161 to 169	1.22	4-0	1.71	5-8
230 to 242	1.59	5-3	2.27	7-6
345 to 362	2.59	8-6	3.80	12-6
500 to 550	3.42	11-3	5.50	18-1
765 to 800	4.53	14-11	7.91	26-0

*For single-phase systems, use the highest voltage available.

For single-phase lines off three phase systems, use the phase-to-phase voltage of the system.

**The 46.1 to 72.5 kV phase-to-ground 3-3 distance contains a 1-3 electrical component and a 2-0 inadvertent movement component while the 72.6 to 121 kV phase-to-ground 3-2 distance contains a 2-2 electrical component and a 1-0 inadvertent movement component.

Note 1: These distances take into consideration the highest switching surge an employee will be exposed to on any system with air as the insulating medium and the maximum voltages shown.

Note 2: The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

Note 3: See Appendix B to this section for information on how the minimum approach distances listed in the tables were derived.

[Statutory Authority: RCW 49.17.040, 99-09-080, § 296-45-325, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-325, filed 3/6/98, effective 5/6/98.]

WAC 296-45-455 Line-clearance tree-trimming operations. This section provides additional requirements for line-clearance tree-trimming operations and for equipment used in these operations.

This section does not apply to qualified employees.

(1) Before an employee climbs, enters, or works around any tree, a determination shall be made of the nominal voltage of electric power lines posing a hazard to employees. However, a determination of the maximum nominal voltage to which an employee will be exposed may be made instead, if all lines are considered as energized at this maximum voltage.

(2) There shall be a second line-clearance tree trimmer within normal (that is, unassisted) voice communication under any of the following conditions:

(a) If a line-clearance tree trimmer is to approach more closely than 10 feet (305 cm) any conductor or electrical apparatus energized at more than 600 volts; or

(b) If branches or limbs being removed are closer to lines energized at more than 600 volts than the distances listed in Table 1, Table 4, and Table 5; or

(c) If roping is necessary to remove branches or limbs from such conductors or apparatus.

(3) Line-clearance tree trimmers shall maintain the minimum approach distances from energized conductors given in Table 1, Table 4, and Table 5.

(4) Branches that are contacting exposed energized conductors or equipment or that are within the distances specified in Table 1, Table 4, and Table 5 may be removed only through the use of insulating equipment.

Note: A tool constructed of a material that the employer can demonstrate has insulating qualities meeting WAC 296-45-305(1) are considered as insulated under this section if the tool is clean and dry.

(5) Ladders, platforms, and aerial devices may not be brought closer to an energized part than the distances listed in Table 1, Table 4, and Table 5.

(6) Line-clearance tree-trimming work may not be performed when adverse weather conditions make the work hazardous in spite of the work practices required by this section. Each employee performing line-clearance tree-trimming work in the aftermath of a storm or under similar emergency conditions shall be trained in the special hazards related to this type of work.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree-trimming work too hazardous to perform safely.

(7) A tree trimmer may climb out of a basket into a tree or from a tree back into the basket so long as he is properly tied into the tree during the entire maneuver and the employer can demonstrate that this is the safest way to perform the work.

[Statutory Authority: RCW 49.17.040, 99-09-080, § 296-45-455, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-455, filed 3/6/98, effective 5/6/98.]

WAC 296-45-901 Appendix A—Nonmandatory.

Appendix A—Tables

Maximum anticipated per-unit transient over-voltage	Distance to employee in feet-inches, phase to ground						
	Air and clear live-line tool						
	Maximum phase-to-phase voltage in kilovolts						
	121	145	169	242	362	550	800
1.5						6-0	9-8
1.6						6-6	10-8
1.7						7-0	11-8
1.8						7-7	12-8
1.9						8-1	13-9
2.0	2-5	2-9	3-0	3-10	5-3	8-9	14-11
2.1	2-6	2-10	3-2	4-0	5-5	9-4	
2.2	2-7	2-11	3-3	4-1	5-9	9-11	
2.3	2-8	3-0	3-4	4-3	6-1	10-6	

Maximum anticipated per-unit transient over-voltage	Distance to employee in feet-inches, phase to ground						
	Air and clear live-line tool						
	Maximum phase-to-phase voltage in kilovolts						
2.4	2-9	3-1	3-5	4-5	6-4	11-3	
2.5	2-9	3-2	3-6	4-6	6-8		
2.6	2-10	3-3	3-8	4-8	7-1		
2.7	2-11	3-4	3-9	4-10	7-5		
2.8	3-0	3-5	3-10	4-11	7-9		
2.9	3-1	3-6	3-11	5-1	8-2		
3.0	3-2	3-7	4-0	5-3	8-6		

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. Table 1 applies otherwise.

Note 2: The distances specified in this table are the air, and live-line tool distances.

Maximum anticipated per-unit transient over-voltage	Distance to employee in feet-inches, phase to ground						
	Air and clear live-line tool						
	Maximum phase-to-phase voltage in kilovolts						
	121	145	169	242	362	550	800
1.5						7-4	12-1
1.6						8-9	14-6
1.7						10-2	17-2
1.8						11-7	19-11
1.9						13-2	22-11
2.0	3-7	4-1	4-8	6-1	8-7	14-10	26-0
2.1	3-7	4-2	4-9	6-3	8-10	15-7	
2.2	3-8	4-3	4-10	6-4	9-2	16-4	
2.3	3-9	4-4	4-11	6-6	9-6	17-2	
2.4	3-10	4-5	5-0	6-7	9-11	18-1	
2.5	3-11	4-6	5-2	6-9	10-4		
2.6	4-0	4-7	5-3	6-11	10-9		
2.7	4-1	4-8	5-4	7-0	11-2		
2.8	4-1	4-9	5-5	7-2	11-7		
2.9	4-2	4-10	5-6	7-4	12-1		
3.0	4-3	4-11	5-8	7-6	12-6		

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. Table 1 applies otherwise.

Note 2: The distances specified in this table are the air, and live-line tool distances.

Maximum anticipated per-unit transient overvoltage	Distance to employee in feet-inches, conductor to ground				
	Air and clear live-line tool				
	Maximum phase-to-phase voltage in kilovolts				
	250	400	500	600	750
1.5 or lower	3-8	5-3	6-9	8-7	11-10
1.6	3-10	5-7	7-4	9-5	13-1
1.7	4-1	6-0	7-11	10-3	14-4
1.8	4-3	6-5	8-7	11-2	15-9

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. However, if the transient overvoltage factor is not known, a factor of 1.8 shall be assumed.

Note 2: The distances specified in this table are the air, and live-line tool distances.

Altitude		Correction factor
(m)	(ft)	
900	3000	1.00
1200	4000	1.02
1500	5000	1.05
1800	6000	1.08
2100	7000	1.11
2400	8000	1.14
2700	9000	1.17
3000	10,000	1.20
3600	12,000	1.25
4200	14,000	1.30
4800	16,000	1.35
5400	18,000	1.39
6000	20,000	1.44

Note: If the work is performed at elevations greater than 3000 ft (900 m) above mean sea level, the minimum approach distance shall be determined by multiplying the distances in Table 1 through Table 4 by the correction factor corresponding to the altitude at which work is performed.

[Statutory Authority: RCW 49.17.040, 99-09-080, § 296-45-901, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-901, filed 3/6/98, effective 5/6/98.]

Chapter 296-46 WAC

SAFETY STANDARDS—INSTALLING ELECTRIC WIRES AND EQUIPMENT—ADMINISTRATIVE RULES

WAC

296-46-090	Foreword.
296-46-23040	Service conductors.
296-46-370	Boxes and fittings.
296-46-495	Electrical work permits and fees.
296-46-50002	On-site sewage disposal systems.
296-46-910	Inspection fees.
296-46-915	Electrical contractor license, administrator certificate and examination, and copy fees.
296-46-930	Electrical contractor license and administrator certificate designation.
296-46-940	Electrical contractor license.
296-46-950	Administrators certificate.

WAC 296-46-090 Foreword. The 1999 edition of the National Electrical Code (NFPA 70 - 1999) including Appendixes A, B, and C, the 1996 edition of Centrifugal Fire Pumps (NFPA 20 - 1996) and the 1996 edition of Emergency and Standby Power Systems (NFPA 110 - 1996) are hereby adopted by reference as part of this chapter. Other codes, manuals, and reference works referred to in this chapter are available for inspection and review in the Olympia office of the electrical section of the department during business hours. Where there is any conflict between this chapter and the National Electrical Code (NFPA 70), Centrifugal Fire Pumps (NFPA 20) or Emergency and Standby Power Systems (NFPA 110), the requirements of this chapter shall be observed. Where there is any conflict between Centrifugal Fire Pumps (NFPA 20) or Emergency and Standby Power Systems (NFPA 110) and the National Electrical Code (NFPA 70), the National Electrical Code shall be followed.

Electrical inspectors will give information as to the meaning or application of the National Electrical Code, the standard on Centrifugal Fire Pumps and the standard on Emergency and Standby Power Systems and this chapter, but

will not lay out work or act as consultants for contractors, owners, or users.

The department is authorized to enforce city electrical ordinances where those governmental agencies do not make electrical inspections under an established program.

At the time of inspection, electrical wiring or equipment subject to this chapter must be sufficiently accessible to permit the inspector to visually inspect the installation to verify conformance with the National Electrical Code and any other electrical requirements of chapter 296-46 WAC. Visual inspection of cables or raceways shall not be required where cables or raceways are fished according to the National Electrical Code. Wires pulled into raceway shall not be considered concealed.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-090, filed 2/12/99, effective 3/15/99; 97-24-033, § 296-46-090, filed 11/25/97, effective 12/29/97. Statutory Authority: RCW 19.28.060, [19.28.]210(6), [19.28.]350 and [19.28.]600. 97-12-016, § 296-46-090, filed 5/28/97, effective 6/30/97. Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-090, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-090, filed 9/10/90, effective 10/11/90.]

WAC 296-46-23040 Service conductors. (1) Service entrance conductors shall extend at least 18 inches from the service head to permit connection to the service drop.

(2)(a) The installation of service conductors not exceeding 600 volts nominal, within a building or structure shall be limited to the following methods: Galvanized or aluminum rigid metal conduit; galvanized intermediate metal conduit; wireways; busways; auxiliary gutters; rigid nonmetallic conduit; cablebus; or mineral-insulated, metal-sheathed cable (type MI).

(b) The installation of service conductors exceeding 600 volts, nominal, within a building or structure shall be limited to the following methods: Galvanized rigid metal conduit; galvanized intermediate metal conduit; metal-clad cable that is exposed for its entire length; cablebus; or busways.

(3) Service conductors under the exclusive control of the serving utility, where installed within a building or structure shall be installed in rigid steel galvanized conduit or Schedule 80 nonmetallic conduit. The grounded service conductor shall be permitted to be identified with a yellow jacket or with one or more yellow stripes.

(4) Multiple-occupancy buildings. A second or additional underground service lateral to a building having more than one occupancy shall be permitted to be installed at a location separate from other service laterals to the building provided that all the following conditions are complied with:

(a) Each service lateral is sized in accordance with the National Electrical Code for the calculated load to be served by the conductors;

(b) Each service lateral terminates in service equipment, including listed metering or service accessory equipment, that is located in or on a unit served by the service equipment;

(c) The service laterals originate at the same transformer or power supply;

(d) The service equipment is separated at least fifteen feet from other service equipment in or on the building; and

(e) A permanent directory, suitable for the environment, is placed at each service equipment location that identifies all

other service equipment locations in or on the building and the area or units served by each.

Exception: Service laterals for two-family dwellings are permitted to terminate in meter enclosures that are permitted to be located less than 15 feet apart.

(5) The service raceway or cable shall extend no more than fifteen feet inside a building or structure.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-23040, filed 2/12/99, effective 3/15/99. Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-23040, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-23040, filed 9/10/90, effective 10/11/90.]

WAC 296-46-370 Boxes and fittings. Single conductors, cables, taps, or splices installed in an open bottom junction box or handhole must be suitable for direct burial. However, an open bottom box manufactured specifically for electrical use will be permitted to be used as an electrical junction box and enclose single conductors, cables, taps, or splices rated for wet locations, only under the following conditions:

(1) The box shall be rated for not less than H-10 loading (8000 pounds over a 10" x 10" area) and be provided with a bolted, hinged, or slide-on lid embossed with the identification "ELECTRIC" or "ELECTRICAL." Metal covers shall be grounded per NEC Article 250.

(2) All conductors must be installed in approved electrical raceways which enter vertically from the open bottom of the enclosure. These raceways shall be fitted with a bushing, terminal fitting, or seal incorporating the physical protection characteristics of a bushing, and project not less than 2 inches (5 cm) above the bottom surface material. The bottom surface material shall be pea gravel, sand, or concrete.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-370, filed 2/12/99, effective 3/15/99. Statutory Authority: RCW 19.28.060, [19.28.]210(6), [19.28.]350 and [19.28.]600. 97-12-016, § 296-46-370, filed 5/28/97, effective 6/30/97. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 87-10-030 (Order 87-07), § 296-46-370, filed 5/1/87. Statutory Authority: RCW 19.28.010 and 19.28.060. 84-15-051 (Order 84-10), § 296-46-370, filed 7/17/84; Order 75-25, § 296-46-370, filed 8/4/75; Order 72-7, § 296-46-370, filed 6/7/72; Order 69-2, § 296-46-370, filed 2/28/69, effective 4/1/69.]

WAC 296-46-495 Electrical work permits and fees.

(1) Where an electrical work permit is required by chapter 19.28 RCW or this chapter, inspections shall not be made, equipment energized, nor services connected unless an electrical work permit is completely and legibly filled out and readily available, and all applicable inspection fees have been paid. The classification or type of facility to be inspected and the scope of the electrical work to be performed shall be clearly shown on the electrical work permit. The address where the inspection is to be made shall be identifiable from the street, road or highway that serves the premises. Driving directions and/or a legible map must be provided for the inspectors' use.

(2) Except for emergency repairs to existing electrical systems, electrical work permits shall be obtained prior to beginning the installation or alteration. An electrical work permit for emergency repairs to existing electrical systems shall be obtained no later than the next business day.

(3) The electrical work permit application shall be posted on the job site at a conspicuous location prior to beginning electrical work and at all times electrical work is performed.

(4) Electrical work permits shall expire one year after the date of purchase unless electrical work is actively and consistently in progress and inspections requested. Electrical work permits for temporary construction activity shall expire ninety days after suspended construction and no later than one year after purchase. Refunds are not available for expired electrical work permits.

(5) Fees shall be paid in accordance with the inspection fee schedule WAC 296-46-910.

(6) Each person, firm, partnership, corporation, or other entity shall furnish an electrical work permit for the installation, alteration, or other electrical work performed or to be performed by that entity. Each electrical work permit application shall be signed by the electrical contractor's administrator (or designee) or the person, or authorized representative of the firm, partnership, corporation, or other entity that is performing or responsible for the electrical installation or alteration.

(7) An electrical work permit is required for installation, alteration, or maintenance of electrical systems except for replacement of circuit breakers or fuses, for replacement of lamps, snap switches, receptacle outlets or heating elements, replacement of a lighting fixture ballast with an exact same ballast, replacement of contactors, relays, timers, starters, or similar control components or for plug-in appliances or travel trailers.

(8) Requests for inspections must be made no later than three business days after completion of the electrical installation or one business day after any part of the installation has been energized, whichever occurs first.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-495, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-46-495, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-495, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-495, filed 9/10/90, effective 10/11/90. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 87-10-030 (Order 87-07), § 296-46-495, filed 5/1/87. Statutory Authority: RCW 19.28.060 and 19.28.210. 85-20-065 (Order 85-16), § 296-46-495, filed 9/27/85. Statutory Authority: RCW 19.28.060. 78-02-098 (Order 77-31), § 296-46-495, filed 1/31/78.]

WAC 296-46-50002 On-site sewage disposal systems.

(1) Pumping chambers for sewage, effluent, or grinder pumps in both on-site and septic tank effluent pump (S.T.E.P.) disposal systems shall be considered unclassified when not more than five residential units are connected to the system or when nonresidential systems have residential loading characteristics and all of the following general installations requirements are complied with.

(a) The pumping chamber shall be adequately vented. Venting may be accomplished through the building or structure plumbing vents where the system venting has been approved by the local jurisdiction authority or by a direct 2" minimum vent to the atmosphere.

(b) Equipment that in normal operation may cause an arc or spark shall not be installed in any pumping chamber.

(c) Float switches installed in an unclassified location shall be hermetically sealed to prevent the entrance of gases or vapors.

(d) Junction boxes, conduits and fittings installed in the septic atmosphere shall be of the noncorrosive type, installed to prevent the entrance of gases or vapors.

(e) Where a conduit system is installed between the pumping chamber and the control panel, motor disconnect, or power source, an approved sealing fitting shall be installed to prevent the migration of gases or vapors from the pumping chamber, and shall remain accessible.

(f) Wire splices in junction boxes installed in pumping chambers, shall be suitable for wet locations.

(g) Submergence of the pumping motor shall be guaranteed by the design of the pump or by redundant off floats.

(2) Nonresidential loading characteristics shall be certified by a Washington state registered professional engineer, engaged in the business of wastewater management systems design. Documentation that is signed and stamped by the engineer shall be provided to the electrical inspector prior to the inspection.

(3) Any residential or nonresidential system that has building or structure floor drains being discharged into the system shall be classified as Class I Division I.

(4) Pumping chamber access covers shall be permitted to be covered by gravel, light aggregate, or noncohesive granulated soil, and shall be accessible for excavation. Access covers that are buried, shall have their location identified at the electrical panel or other approved prominent location.

(5) Secondary treatment effluent pumping chambers such as sandfilters are unclassified, and require no special wiring methods.

Inspection approval is required prior to covering or concealing any portion of the septic electrical system, including the pump. New septic and effluent tanks containing electrical wires and equipment shall be inspected and approved by the department prior to being loaded with sewage.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-50002, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-46-50002, filed 5/29/98, effective 6/30/98.]

WAC 296-46-910 Inspection fees. To calculate the inspection fees, the amperage is based on the conductor ampacity or the overcurrent device rating. The inspection fees shall be calculated from sections (1) through (5) below. However, the total fee shall not be less than the number of progress inspection (one-half hour) units times the progress inspection fee rate from subsection (5) MISCELLANEOUS (k) below.

- (1) RESIDENTIAL
 - (a) Single and two family residential (new construction)
 - (i) First 1300 sq. ft. or less \$ 67.00
 - Each additional 500 sq. ft. or portion of \$ 21.50

Note: Square footage is the area included within the surrounding exterior walls of a building exclusive of any interior courts. (This includes any floor area in an attached garage, basement, or unfinished living space.)
 "Inspected with the service" means that a separate service inspection fee is included on the same electrical work permit and "inspected at the same time" means all wiring is to be ready for inspection during the initial inspection trip.

An "outbuilding" is a structure that serves a direct accessory function to the residence, such as a pump house or storage building. Outbuilding does not include buildings used for commercial type occupancies or additional dwelling occupancies.

- (ii) Each outbuilding or detached garage inspected at the same time as a dwelling unit on the property \$ 28.00
- (iii) Each outbuilding or detached garage inspected separately \$ 44.25
- (iv) Each swimming pool - inspected with the service \$ 44.25
- (v) Each swimming pool - inspected separately \$ 67.00
- (vi) Each hot tub, spa, or sauna - inspected with the service \$ 28.00
- (vii) Each hot tub, spa, or sauna - inspected separately \$ 44.25
- (viii) Each septic pumping system - inspected with the service \$ 28.00
- (ix) Each septic pumping system - inspected separately \$ 44.25
- (b) Multi-family residential and miscellaneous residential structures, services and feeders (new construction)

Each service and/or feeder

Ampacity	Service/Feeder	Additional Feeder
0 to 200	\$ 72.25	\$ 21.50
201 to 400	89.75	44.25
401 to 600	123.25	61.50
601 to 800	158.00	84.25
801 and over	225.25	169.00

- (c) Single family or multi-family altered services including circuits
- (i) Each altered service and/or altered feeder

Ampacity	Service or Feeder
0 to 200	\$ 61.50
201 to 600	89.75
over 600	135.25

- (ii) Maintenance or repair of meter or mast (no alterations to service or feeder) \$ 33.50
- (d) Single or multi-family residential circuits only (no service inspection)
 - (i) 1 to 4 circuits (see note) \$ 44.25
 - Except: Water heater load control devices installed in residences as part of an energy conservation program 27.00
 - The \$ 27.00 permit fee for water heater load control devices will expire on December 31, 2001.
 - (ii) Each additional circuit (see note) 5
- Note: Altered or added circuit fees are calculated per panelboard. Total cost of the alterations in an individual panel should not exceed the cost of a complete altered service or feeder of the same rating, as shown in subsection (1) RESIDENTIAL (c)(i) (table) above.
- (e) Mobile homes, modular homes, mobile home parks, and RV parks
 - (i) Mobile home or modular home service or feeder only \$ 44.25
 - (ii) Mobile home service and feeder 72.25
 - (iii) Mobile home park sites and RV park sites
 - (A) First site service or site feeder 44.25
 - (B) Each additional site service; or additional site feeder inspected at the same time as the first service or feeder 28.00

Note: For master service installations, see subsection (2).
 (2) COMMERCIAL/INDUSTRIAL
 (a) New service or feeder and additional new feeders inspected at the same time (includes circuits)

(i) Feeder Ampacity	Service/ Feeder	Additional Feeder inspected at the same time
0 to 100	\$ 72.25	\$ 44.25
101 to 200	89.75	56.25
201 to 400	169.00	67.00
401 to 600	197.00	78.75
601 to 800	254.50	107.25
801 to 1000	310.75	129.75
Over 1000	339.00	181.00

Note: For large COMMERCIAL/INDUSTRIAL projects that include multiple feeders, "inspected at the same time" can be interpreted to include additional inspection trips for a single project. The additional inspections must be for electrical work specified on the permit at the time of purchase. The permit fee for such projects shall be calculated from (2) (a) (i) (table) above. However, the total fee shall not be less than the number of progress inspection (one-half hour) units times the progress inspection fee rate from subsection (5) MISCELLANEOUS (k) below.

- (ii) Over 600 volts surcharge \$ 56.25
- (b) Altered services or feeders (no circuits)

(i) Ampacity	Service/ Feeder
0 to 200	\$ 72.25
201 to 600	169.00
601 to 1000	254.50
Over 1000	282.75

- (ii) Over 600 volts surcharge \$ 56.25
 - (iii) Maintenance or repair of meter or mast (no alteration to the service or feeder) 61.50
 - (c) Circuits only
 - (i) First five circuits per branch circuit panel \$ 56.25
 - (ii) Each additional circuit per branch circuit panel 5
- Note: Altered/added circuit fees are calculated per panelboard. Total cost of the alterations in a panel (or panels) should not exceed the cost of a new feeder (or feeders) of the same rating, as shown in subsection (2) COMMERCIAL/INDUSTRIAL (a)(i) (table) above.

(3) TEMPORARY SERVICES

Note: Temporary electrical power and lighting installations are intended to be used during the period of construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities.

Temporary electrical power and lighting installations are allowed during emergencies and for tests, experiments, and developmental work. Temporary electrical power and lighting installations are allowed for a period not to exceed 90 days for Christmas decorative lighting and similar purposes. Temporary wiring shall be removed immediately upon completion of construction or purpose for which the wiring was installed.

Temporary services, temporary stage or concert productions

Ampacity	Service or Feeder	Additional Feeder
0 to 60	\$38.75	\$20.00
61 to 100	44.25	21.50
101 to 200	56.25	28.00
201 to 400	67.00	33.50
401 to 600	89.75	44.25
Over 600	101.75	50.75

Temporary stage or concert inspections requested outside of normal business hours will be subject to the portal to portal hourly fees in subsection (5) MISCELLANEOUS (n). The fee for such after hours inspections shall be the greater of the fee from (3) TEMPORARY SERVICES (table) or the portal to portal fee.

(4) IRRIGATION MACHINES, PUMPS AND EQUIPMENT

- Irrigation machines
 - (a) Each tower when inspected at the same time as a service and feeder (per subsection (2) COMMERCIAL/INDUSTRIAL above) \$ 5
 - (b) Towers - when not inspected at the same time as a service and feeders - one to six towers 67.00

Each additional tower 5

(5) MISCELLANEOUS - commercial/industrial and residential

- (a) Low voltage thermostats
 - (i) First thermostat \$33.50
 - (ii) Each additional thermostat inspected at the same time as the first 10.50
- (b) Low voltage fire alarm and burglar alarm. Includes nurse call, intercom, security systems, energy management control systems and similar low energy circuits and equipment
 - (i) First 2500 sq. ft. or less \$ 38.75
 - (ii) Each additional 2500 sq. ft. or portion thereof 10.50
- (c) Signs and outline lighting
 - (i) First sign (no service included) \$ 33.50
 - (ii) Each additional sign inspected at the same time on the same bldg. or structure 16.00
- (d) Berth at a marina or dock \$ 44.25

Each additional berth inspected at the same time 28.00

Note: Five berths or more shall be permitted to have the inspection fees based on appropriate service and feeder fees from section (2) COMMERCIAL/INDUSTRIAL (a)(i) above.

- (e) Yard pole, pedestal, or other meter loops only \$ 44.25

Meters installed remote from service equipment: Inspected at same time as service, temporary service or other installations 10.50

- (f) Emergency inspections requested outside normal work hours. Reg- ular fee plus surcharge of \$ 84.25

- (g) Generators
 - Portable generators: Permanently installed transfer equipment for portable generators \$ 61.50
 - Permanently installed generators: Refer to appropriate residential or commercial new service or feeder section

Note: Generator feeders (for permanently installed generators) and normal system feeders to a single panelboard or disconnect (via an automatic or manual transfer switch) shall each be evaluated as an individual feeder.

- (h) Annual permit fee for plant location employing regular electrical maintenance staff - each inspection two hour maximum.

	Fee	Inspections
1 to 3 plant electricians	\$ 1,618.00	12
4 to 6 plant electricians	3,237.50	24
7 to 12 plant electricians	4,856.00	36
13 to 25 plant electricians	6,475.50	52
more than 25 plant electricians	8,095.00	52

- (i) Carnival inspections
 - (i) First field inspection each year
 - (A) Each ride and generator truck \$ 16.00
 - (B) Each remote distribution equipment, concession or gaming show 5
 - (C) If the calculated fee for first field inspection of (A) and (B) above is less, the minimum inspection fee shall be: 84.25
 - (ii) Subsequent inspections
 - (A) First 10 rides, concessions, generators, remote distribution equipment or gaming show \$ 84.25
 - (B) Each additional ride, concession, generator, remote distribution equipment or gaming show 5
 - (iii) First field inspection each year \$ 67.00
 - Single concession or ride, not part of a carnival
 - (iv) Subsequent inspections \$ 44.25

- Single concession or ride, not part of a carnival
- (j) Trip fees
- (i) Requests by property owners to inspect existing installations \$ 67.00
- (ii) Submitter notifies the department that work is ready for inspection when it is not ready 33.50
- (iii) Additional inspection required because submitter has provided the wrong address 33.50
- (iv) More than one additional inspection required to inspect corrections; or for repeated neglect, carelessness, or improperly installed electrical work 33.50
- (v) Each trip necessary to remove a noncompliance notice 33.50
- (vi) Corrections have not been made in the prescribed time, unless an exception has been requested and granted 33.50
- (vii) Installations that are covered or concealed before inspection 33.50
- (k) Progress inspections
- On partial or progress inspections, each one-half hour \$ 33.50
- Note: The fees calculated in main sections (1) through (5) shall apply to all electrical work. This section is intended to be applied to a permit where the permit holder has requested additional inspections beyond the number supported by the permit fee calculated at the rate in (k) above.
- (l) Plan review fee
- (i) Fee is thirty-five percent of the electrical work permit fee as determined by WAC 296-46-495, plus a plan review submission fee of \$ 56.25
- (ii) Supplemental submissions of plans per hour or fraction of an hour \$ 67.00
- (iii) Plan review shipping and handling fee \$ 16.00
- (m) Out-of-state inspections
- (i) Permit fees will be charged according to the fees listed in this section.
- (ii) Travel expenses:
All travel expenses and per diem for out-of-state inspections are billed following completion of each inspection(s). These expenses can include, but are not limited to: Inspector's travel time, travel cost and per diem at the state rate. Travel time is hourly based on the rate in (n) of this subsection.
- (n) Other inspections
Inspections not covered by above inspection fees shall be charged portal to portal per hour \$ 67.00
- (o) Refund processing fee
All requests for permit fee refunds will be assessed a processing fee. \$ 10.50
- (p) Variance request processing fee
This fee is nonrefundable once the transaction has been made \$ 67.00

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-46-910, filed 5/28/99, effective 6/28/99. Statutory Authority: RCW 34.05.356 (1)(f). 98-22-063, § 296-46-910, filed 11/2/98, effective 12/3/98. Statutory Authority: Chapter 19.28 RCW. 98-12-042, § 296-46-910, filed 5/29/98, effective 6/30/98; 97-24-033, § 296-46-910, filed 11/25/97, effective 12/29/97. Statutory Authority: RCW 19.28.060, [19.28.]210(6), [19.28.]350 and [19.28.]600. 97-12-016, § 296-46-910, filed 5/28/97, effective 6/30/97. Statutory Authority: RCW 19.28.060, 19.28.010(1), 19.28.600 and 19.28.210(6). 92-08-102, § 296-46-910, filed 4/1/92, effective 5/2/92. Statutory Authority: RCW 19.28.060 and 19.28.210(6). 90-17-041, § 296-46-910, filed 8/10/90, effective 9/10/90. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 87-10-030 (Order 87-07), § 296-46-910, filed 5/1/87. Statutory Authority: RCW 19.28.060 and 19.28.210. 85-20-065 (Order 85-16), § 296-46-910, filed 9/27/85. Statutory Authority: RCW 19.28.210. 83-16-058 (Order 83-20), § 296-46-910, filed 8/2/83. Statutory Authority: RCW 19.28.060 and 19.28.210. 82-18-036 (Order 82-29), § 296-46-910, filed 8/26/82. Statutory Authority: RCW 19.28.060. 81-06-037 (Order 81-5), § 296-46-910, filed 2/27/81, effective 4/1/81; 78-02-098 (Order 77-31), § 296-46-910, filed 1/31/78.]

WAC 296-46-915 Electrical contractor license, administrator certificate and examination, and copy fees.

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- (1) General or specialty contractor license (per twenty-four month period) \$ 216.25
- (2)(a) Administrator certificate examination application (nonrefundable) \$ 27.00
- (b) Administrator first-time examination fee \$ 64.75
- (c) Administrator re-test examination fee \$ 75.75
- (3) Administrator original certificate (submitted with application) \$ 64.50
- (4) Administrator certificate renewal (per twenty-four month period) \$ 81.00
- (5) Late renewal of administrator certificate (per twenty-four month period) \$ 162.25
- (6) Transfer of administrator designation \$ 32.25
- (7) Certified copy of each document (maximum \$ 45.75 per file) \$ 20.75 first document
\$ 2 each additional document
- (8) Reinstatement of a general or specialty contractor's license after a suspension \$ 43.50
- (9) Reinstatement of an administrator's certificate after a suspension \$ 43.50
- (10) Refund processing fee
All requests for refunds will be assessed a processing fee \$ 10.50

Note: Failure to appear for an examination results in forfeiture of the examination fee.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-46-915, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 19.28 RCW. 98-12-042, § 296-46-915, filed 5/29/98, effective 6/30/98; 97-24-033, § 296-46-915, filed 11/25/97, effective 12/29/97. Statutory Authority: RCW 19.28.060, [19.28.]210(6), [19.28.]350 and [19.28.]600. 97-12-016, § 296-46-915, filed 5/28/97, effective 6/30/97. Statutory Authority: RCW 19.28.060, 19.28.010(1), 19.28.600, 19.28.120(2) and 19.28.510(2). 92-08-102, § 296-46-915, filed 4/1/92, effective 5/2/92. Statutory Authority: RCW 19.28.060, 19.28.120(2) and 19.28.510(2). 90-17-041, § 296-46-915, filed 8/10/90, effective 9/10/90. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 86-18-041 (Order 86-23), § 296-46-915, filed 8/29/86.]

WAC 296-46-930 Electrical contractor license and administrator certificate designation. See RCW 19.28.120.

(1) General electrical license and/or administrator's certificate encompasses all phases and all types of electrical installations.

(2) Specialty (limited) electrical licenses and/or administrator's certificates are as follows:

(a) Residential (02): Limited to the wiring of one and two family dwellings, or multifamily dwellings not exceeding three floors above grade. All wiring to be in nonmetallic sheathed cable, except service and/or feeders. This specialty does not include wiring commercial occupancies such as motels, hotels, offices, or stores.

(b)(i) Pump and irrigation (03): Limited to the electrical connection of domestic and irrigation water pumps, circular irrigating systems and related pumps and pump houses. This specialty includes circuits, feeders, controls, and services to supply said pumps.

(ii) Domestic well (03A): Limited to the extension of a branch circuit, which is supplied and installed by others, to pump controllers; pressure switches; alarm sensors; and water pumps which do not exceed 7 1/2 horsepower at 230 volts AC single phase.

(c) Signs (04): Limited to placement and connection of signs and outline lighting, the electrical supply, related controls and associated circuit extensions thereto; and the instal-

lation of a maximum 60 ampere, 120/240 volt single phase service to supply power to a remote sign only.

(d) Domestic appliances (05): Limited to the electrical connection of household appliances and the wiring thereto; such as hot water heaters, ranges, dishwashers, clothes dryers, oil and gas furnaces, and similar appliances. This specialty includes circuits to the appliances; however, it does not include the installation of service and/or feeders or circuits to electric furnaces and heat pump equipment.

(e)(i) Limited energy system (06): Limited to the installation of signaling and power limited circuits and related equipment. This specialty includes the installation of fire protection signaling systems, intrusion alarms, nonutility owned communications systems, and such similar low energy circuits and equipment.

(ii) HVAC/refrigeration limited energy system (06A): Limited to installation of low voltage, Class 2 HVAC/refrigeration control circuit cables for control of furnaces, heat pumps, and similar HVAC or refrigeration equipment when such conductors do not connect to other than HVAC or refrigeration equipment and when such buildings do not exceed three floors above grade, except for residential occupancies. Associated limited energy control components that are integral with, and control the operation of, the heating and cooling equipment or refrigeration equipment are included in the scope of this specialty. These limited energy components include, but are not limited to, the following: Thermostats, humidistats, low voltage damper controls, outdoor sensing controls, outside air dampers, stand-alone duct smoke detectors, zone control valves, and the mounting of HVAC/refrigeration control panels and low voltage connections only. Installation of integrated energy management systems other than HVAC/refrigeration systems as defined herein, are **not** included in this specialty.

This specialty may install, service, maintain, repair, or replace HVAC/refrigeration electrical systems as long as the work is on the HVAC/refrigeration system itself. This specialty may replace line voltage components within the equipment, only if the components are like in kind with identical voltage and current ratings. This specialty may **not** install branch circuit (line voltage) conductors, services, feeders, panelboards, or disconnect switches to HVAC/refrigeration equipment. Short sections of raceway may be installed for access to or physical protection of cables, however wiring in conduit systems and wiring in classified locations are excluded from this specialty.

On or before March 1, 2000, a registered contractor (chapter 18.27 RCW) who provides proof to the department that for a minimum of two years they were engaged full time in the business of HVAC or refrigeration equipment installation, service or repair work may designate a supervisory employee or member of the firm to take the required administrator's examination. This initial designee will satisfy the requirements of RCW 19.28.125 for application for an HVAC/refrigeration limited energy contractor's license. This initial designated administrator must successfully pass the HVAC/refrigeration limited energy specialty administrator's examination prior to the expiration (twenty-four months) of the specialty electrical contractor license. No extension of this initial administrator's status will be permitted unless they

pass the HVAC/refrigeration limited energy specialty administrator's examination to qualify for a permanent certificate.

(f)(i) Nonresidential maintenance (07): Limited to maintenance, repair and replacement of electrical equipment and conductors on industrial or commercial premises. This specialty certificate of license does not include maintenance activities in hotel, motel, or dwelling units.

(ii) Nonresidential lighting maintenance and lighting retrofit (07A): Limited to working within the housing of existing nonresidential lighting fixtures for work related to repair, service, maintenance of lighting fixtures and installation of energy efficiency lighting retrofit upgrades. This specialty includes replacement of lamps, ballasts, sockets and the installation of listed lighting retrofit reflectors and kits. All work is limited to the fixture body, except remote located ballasts may be replaced or retrofitted with approved products. This specialty does not include installing new fixtures or branch circuits; moving or relocating existing fixtures; or altering existing branch circuits.

This specialty contractor must employ an administrator who holds a nonresidential lighting maintenance and lighting retrofit administrator certificate; or a nonresidential maintenance administrator; or a general administrator. This specialty contractor must adhere to the ratio requirements for trainee supervision in RCW 19.28.510 for specialty electricians to trainees. A specialty lighting maintenance and retrofit specialty technician is allowed to supervise a maximum of two trainees on the same job site. A contractor must obtain an electrical permit and request inspection for all retrofit installations.

The contractor must have a documented electrical lighting maintenance safety training program for all employees working under this specialty contractor license.

(3) Combination specialty electrical contractor license. The department may issue a combination specialty electrical contractor license to a firm which qualifies for more than one specialty electrical contractor license. The license shall plainly indicate the specialty licenses which are included in the combination electrical contractor license.

(4) Combination specialty electrical administrator certificate. The department may issue a combination specialty administrator certificate to an individual who qualifies for more than one specialty administrators' certificate. The combination specialty administrators' certificate shall plainly indicate the specialty administrators' certificate the holder has qualified for.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-930, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-46-930, filed 5/29/98, effective 6/30/98; 97-24-033, § 296-46-930, filed 11/25/97, effective 12/29/97. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 86-18-041 (Order 86-23), § 296-46-930, filed 8/29/86.]

WAC 296-46-940 Electrical contractor license. (1) The department shall issue an electrical contractor license to a person, firm, partnership, corporation or other entity that complies with RCW 19.28.120 which shall expire twenty-four months following the date of issue. An electrical contractor license will not be issued to or renewed for a person, firm, or partnership unless the Social Security number, date of birth, and legal address of the individual legal owner(s) are

submitted with the application. The department may issue an electrical contractor license for a period greater or less than twenty-four months for the purpose of equalizing the number of electrical contractor licenses which expire each month. The department shall prorate the electrical contractor license fee according to the number of months in the license period. All subsequent licenses shall be issued for a twenty-four month period.

(2) Cash or securities deposit release. A cash or security deposit which has been filed with the department in lieu of a surety bond, shall not be released until one year after the date the electrical contractor notifies the department in writing, that the person, firm, partnership, corporation, or other entity who (which) has been issued the electrical contractor license, has ceased to do business in the state of Washington.

(3) Manufacturers of electrical products shall be allowed to utilize their factory-trained personnel to perform initial calibration, testing, adjustment, modification incidental to the startup and check out of the equipment, or replacement of components within the confines of the specific product, without permit or required licensing, provided: The product has not been previously energized and/or is within the manufacturer's warranty. Modifications, as designated above, shall not include changes to the original intended configuration nor changes or contact with externally field-connected components. The manufacturers will be responsible for obtaining any required reapproval/recertification from the original listing agent.

(4) No license under the provision of this chapter shall be required from any manufacturer or any person, firm, partnership, or other entity employed by or authorized by a manufacturer of power generation equipment assemblies for the following work on premanufactured electric power generation equipment assemblies and control gear:

(a) Testing, repair, modification, maintenance, and installation of components internal to the transfer switch, or replacement of components within the confines of the specific product incidental to the start up and check out of the equipment: Provided, The product has not been previously energized and/or is within the manufacturer's warranty. Modifications of the transfer switch shall not include changes to the original intended configuration nor changes or contact with externally field-connected components. The manufacturer will be responsible for obtaining any required reapproval or recertification from the original listing agent;

(b) Testing, repair, modification, maintenance, installation of components internal to the control gear;

(c) Testing, repair, modification, maintenance, installation of components internal to the premanufactured power generation unit.

Premanufactured electric power generation equipment assemblies are made up of reciprocating internal combustion engines and the associated control gear equipment. Control gear equipment includes control logic, metering, and annunciation for the operation and the quality of power being generated by the reciprocating internal combustion engine and does not have the function of distribution of power.

(5) For the purposes of this subsection, the following work on premanufactured electric power generation equip-

ment assemblies is not exempt from the requirements of chapter 19.28 RCW.

(a) Installation or connection of conduit or wiring between the power generation unit, transfer switch, control gear;

(b) Installation of the transfer switch;

(c) Connections between the power generation unit, transfer switch, control gear, and utility's transmission or distribution systems;

(d) Connections between the power generation unit, transfer switch, control gear, and any building or structure;

(e) Test connections with any part of:

(i) The utility's transmission or distribution system;

(ii) The building or structure.

Nothing in this subsection shall alter or amend any other exemptions from or requirement for licensure under this chapter.

[Statutory Authority: Chapter 19.28 RCW, 99-05-052, § 296-46-940, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-46-940, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW, 86-18-041 (Order 86-23), § 296-46-940, filed 8/29/86.]

WAC 296-46-950 Administrators certificate. (1) The department shall issue an administrator certificate to a person who qualifies for a certificate in accordance with RCW 19.28.125 and makes proper application that includes the person's Social Security number, date of birth, and mailing address. The first certificate issued shall expire on the person's birthdate at least one year and not more than three years from the date of issue. If a person was born in an even numbered year, the certificate shall expire on the holder's even numbered birthdate. If the person was born in an odd numbered year, the certificate shall expire on the holder's odd numbered birthdate. The department shall prorate the administrators certificate fee according to the number of months or major portions of months in a certificate period. All subsequent certificates shall be issued for a twenty-four month period. The signature of a person who desires to renew their certificate shall be notarized.

(2) Effective July 1, 1987, an administrator designated on the electrical contractor license shall be a member of the firm who shall fulfill the duties of a full-time supervisory employee, or be a full-time supervisory employee. In determining whether the person is a member of the firm, the department shall require that the person is named as the sole proprietor, a partner or an officer in a corporation as shown on the electrical contractor license application on file with the department. In determining whether a person is a full-time supervisory employee, the department shall consider whether the person is on the electrical contractor's full-time payroll; receives a regular salary or wage similar to other employees; has supervisory responsibility for work performed by the electrical contractor and carries out the duties shown in RCW 19.28.125(2).

(3) The department may deny an application for an administrator's certificate for up to two years if the applicant's previous administrator's certificate has been revoked for a serious violation and all appeals concerning the revocation have been exhausted.

A serious violation is a violation of chapter 19.28 RCW, chapter 296-46 or 296-401 WAC that creates a hazard of fire or a danger to life safety. A serious violation is also a violation that presents imminent danger to the public. Imminent danger to the public is present when installations of wire and equipment that convey electric current have been installed in such a condition that a fire-hazard or a life-safety hazard is present. Imminent danger to the public is also present when unqualified, uncertified, or fraudulently certified electricians or administrators; or unlicensed or fraudulently licensed contractors are continuously or repeatedly performing or supervising the performance of electrical work covered under chapter 19.28 RCW. A certified electrician is considered qualified, provided the electrician is working within his or her certification.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-46-950, filed 2/12/99, effective 3/15/99; 97-24-033, § 296-46-950, filed 11/25/97, effective 12/29/97. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 86-18-041 (Order 86-23), § 296-46-950, filed 8/29/86.]

Chapter 296-50 WAC

SAFETY STANDARDS—MANUFACTURE OF EXPLOSIVES

WAC

296-50-010 through 296-50-230 Repealed.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

- 296-50-010 Foreword. [Foreword, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-020 Introductory. [Introductory clause, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-030 Management's responsibility. [Rule 1, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-040 Employee's responsibility. [Rule 2, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-050 Minimum requirements for first aid. [Rule 3, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-060 First-aid kit. [Rule 4, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-070 First-aid room. [Rule 5, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-080 General regulations. [Rules A-1 through A-38, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-090 Dope house. [Rules B-1 through B-28, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-100 Dynamite mixing house. [Rules C-1 through C-18, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-110 Dynamite pack machine house. [Rules D-1 through D-16, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

- 296-50-120 Gelatin mixing house. [Rules E-1 through E-17, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-130 Gelatin cartridge machine house. [Rules F-1 through F-17, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-140 Handpack house. [Rules G-1 through G-8, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-150 Waste opening house. [Rules H-1 through H-10, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-160 Box packing house. [Rules I-1 through I-10, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-170 Powder repair shop. [Rules J-1 through J-9, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-180 Batch nitrator. [Rules K-1 through K-6, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-190 Separator and prewash operation. [Rules K-7 through K-16, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-200 N.G. neutralizing house and store house. [Rules L-1 through L-10, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-210 Acid operations. [Rules M-1 through M-19, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-220 Spare parts houses. [Rules N-1 through N-4, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-50-230 Nitrocotton screening and drying houses. [Rules O-1 through O-27, filed 3/23/60, effective 8/15/57.] Repealed by 99-16-085, filed 8/3/99, effective 11/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-50-010 through 296-50-230 Repealed. See Disposition Table at beginning of this chapter.

Chapter 296-52 WAC

SAFETY STANDARDS FOR THE POSSESSION AND HANDLING OF EXPLOSIVES

WAC

- 296-52-421 Licenses—Information verification.
- 296-52-425 Dealer's license.
- 296-52-429 License for manufacturing.
- 296-52-433 Purchaser's license.
- 296-52-437 User's (blaster's) license.
- 296-52-449 Storage magazine license fees.
- 296-52-477 Quantity and distance table for separation between magazines.
- 296-52-489 Transportation.
- 296-52-493 Use of explosives and blasting agents.

WAC 296-52-421 Licenses—Information verification. (1) Any information request by the department, in order to verify statements in an application or in order to facilitate a department inquiry, shall be supplied prior to the issuance or renewal of a license. A Social Security number is required at the time of application (RCW 26.23.150).

(2) The director of labor and industries shall require, as a condition precedent to the original issuance or renewal of any explosive license, fingerprinting and criminal history record information checks of every applicant.

(a) In the case of a corporation, fingerprinting and criminal history record information checks shall be required for the management officials directly responsible for the operations where the explosives are used if such persons have not previously had their fingerprints recorded with the department of labor and industries.

(b) In the case of a partnership, fingerprinting and criminal history record information checks shall be required of all general partners.

(c) Such fingerprints as are required by the department of labor and industries shall be submitted on forms provided by the department to the identification section of the Washington state patrol and to the identification division of the Federal Bureau of Investigation in order that these agencies may search their records for prior convictions of the individuals fingerprinted.

(d) The Washington state patrol shall provide to the director of labor and industries such criminal record information as the director may request.

(e) The applicant shall give full cooperation to the department of labor and industries and shall assist the department of labor and industries in all aspects of fingerprinting and criminal history record information check.

(f) The applicant may be required to pay a fee not to exceed twenty dollars to the agency that performs the fingerprinting and criminal history process.

(3) The director of labor and industries shall not issue a license to manufacture, purchase, store, use, or deal with explosives to:

(a) Any persons under twenty-one years of age;

(b) Any person whose license is suspended or whose license has been revoked, except as provided in WAC 296-52-423;

(c) Any person who has been convicted in this state or elsewhere of a violent offense as defined in RCW 9.94A.030, perjury, false swearing, or bomb threats or a crime involving a schedule I or II controlled substance, or any other drug or alcohol related offenses, unless such other drug or alcohol related offense does not reflect a drug or alcohol dependency.

Exception: The director of labor and industries may issue a license if the person suffering a drug or alcohol related dependency is participating in or has completed an alcohol or drug recovery program acceptable to the department of labor and industries and has established control of their alcohol or drug dependency. The director of labor and industries shall require the applicant to provide proof of such participation and control.

(d) Any person who has previously been adjudged to be mentally ill or insane, or to be incompetent due to any mental disability or disease and who has not at the time of application been restored to competency.

(e) The department shall not issue or reissue an explosives license to any individual who is physically handicapped or diseased to an extent that he or she cannot safely pursue or continue all normal aspects of an explosives occupation. Disqualifying physical imparities may include but are not limited

to examples such as blindness, deafness, or subject to epileptic or diabetic seizures or coma.

(f) A license holder of any unexpired license(s) shall surrender such license(s) to the department upon request for identified cause. Such surrender is subject to appeal to refute the contention of cause with verification of physical ability by a qualified physician.

Note: See also WAC 296-52-425 and 296-52-433.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-094, § 296-52-421, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW, 95-07-014, § 296-52-421, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-421, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-10-044 (Order 86-24), § 296-52-421, filed 5/6/86.]

WAC 296-52-425 Dealer's license. (RCW 70.74.130 and 70.74.230, apply.)

(1) The application for a dealer's license to buy explosives for the sole purpose of resale shall be made to Department of Labor and Industries, Olympia.

(2) Original license applications and/or application for renewal shall be completed on forms available from the department and shall comply with all requirements of WAC 296-52-421. The license fee shall be twenty-five dollars.

(3) The license shall be renewed annually, no later than the expiration date.

(4) When an order for explosives is placed in person, by telephone, or in writing by a purchaser, the seller shall request proper authorization and identification from the purchaser and shall record the purchaser's license number.

(5) A dealer shall not distribute explosive materials to a company or individual on the order of a person who does not appear on the up to date list of representatives or agents and if the person does appear on the list, the dealer shall verify the identity of such person.

Exception: The above regulation(s) shall not apply to licensed common carrier companies when said common carrier is not purchasing the explosives but is merely transferring the materials from the seller to the purchaser and the transfer practices comply with current state and federal DOT regulations.

(6) Dealers records.

(a) A dealer's record of all explosives purchased and sold as defined in RCW 70.74.010, shall be kept on file and a copy transmitted not later than the tenth of every month to the department.

(b) The purchaser's name and license number shall be stated on dealer's record, and the name of the person authorized by the purchaser to physically receive the explosives.

(c) The dealer shall ascertain the identity of the individual who receives the explosives from a picture-type identification card, such as a driver's license. The recipient shall sign a receipt, documenting the explosives received and said receipt shall be retained by the dealer for not less than one year from the date of purchase.

(7) Any package, cask, or can containing any explosive, nitroglycerin, dynamite, or powder that is put up for sale, or is delivered to any warehouseman, dock, depot, or common carrier shall be properly labeled thereon to indicate its explosive classification.

(8) If the explosives are delivered by the dealer or dealer's authorized agent to an explosives magazine, the license number of said magazine and the legal signature of the recipient, properly authorized and identified, shall be obtained.

(9) No person shall sell, display, or expose for sale any explosive, improvised device or blasting agent on any highway, street, sidewalk, public way, or public place.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-425, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-425, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-425, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-425, filed 5/6/86.]

WAC 296-52-429 License for manufacturing. RCW 70.74.110 and 70.74.144, apply.

(1) No person, partnership, firm, company or corporation shall manufacture explosives or blasting agents or use any process involving explosives as a component part in the manufacture of any device, article or product without first obtaining a manufacturer's license from the department of labor and industries.

(2) The application for license for manufacturing explosives and/or blasting agents shall be made to Department of Labor and Industries, Division of Consultation and Compliance, Olympia. The license fee for either an original license or a renewal shall be twenty-five dollars.

(3) The application for original license or renewal shall be completed on forms available from the department and shall provide the following information:

- (a) Location of place of manufacture or processing;
- (b) Kind of explosives manufactured, processed, or used;
- (c) The distance that such explosives manufacturing building is located or intended to be located from the other factory buildings, magazines, inhabited buildings, railroads, highways, and public utility transmission systems;
- (d) The name and address of the applicant;
- (e) The reason for desiring to manufacture explosives;
- (f) The applicant's citizenship, if the applicant is an individual;
- (g) If the applicant is a partnership, the names and addresses of the partners and their citizenship;
- (h) If the applicant is an association or corporation, the names and addresses of the officers and directors thereof, and their citizenship; and
- (i) Such other pertinent information as the director of labor and industries shall require to effectuate the purpose of this chapter.

(4) Each application for license shall be accompanied by a site plan of the proposed or existing manufacturing facilities. The plan shall show:

(a) The distance each manufacturing building is located from other buildings on the premises where people are employed, from other occupied buildings on adjoining property, from buildings where customers are served, from public highways and utility transmission systems.

(b) The site plan shall demonstrate compliance with all applicable requirements of chapter 70.74 RCW, the State Explosives Act as it exists at the time of this adoption or is hereafter amended; with applicable requirements of chapter

296-50 WAC, Safety standards—Manufacture of explosives; with the separation/location requirements of this chapter.

(c) The site plan shall identify and describe all natural or artificial barricades which are utilized to influence minimum permissible separation distances.

(d) The site plan shall identify the nature of and kind of work carried on in each building.

(e) The site plan shall specify the maximum amount and kind of explosives or blasting agents which will be permitted in each building or magazine at any one time.

(5) The application for license shall comply with all requirements of WAC 296-52-421.

(6) Upon receipt of a completed application meeting all requirements of this section, the department will schedule an inspection of the premises at the earliest time possible.

(7) The department will issue a license to the applicant(s) provided that:

(a) The required inspection confirms that the site plan is accurate and the facilities comply with applicable regulations of the department;

(b) The applicant(s) or operating superintendent and employees are sufficiently trained and experienced in the manufacture of explosives.

(8) A license to manufacture explosives and/or blasting agents shall be valid for not more than one year from the date of issue unless suspended or revoked by the department.

(9) A copy of the site plan and manufacturer's license shall be posted in the main office of each manufacturing plant.

(a) The site plan shall be maintained to reflect current status of manufacturing facilities, occupancy changes, etc.

(b) The department shall be notified when significant change occurs in the site plan. If the change is of such nature or magnitude as to make compliance with all requirements of this chapter questionable, the license holder shall consult with the department before changing the operations.

(10) Specific applicable requirements for the manufacture of explosives and blasting agents are codified and distributed in chapter 296-50 WAC, Safety standards—Manufacture of explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-429, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-429, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-429, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-429, filed 5/6/86.]

WAC 296-52-433 Purchaser's license. RCW 70.74.135 and 70.74.137, apply.

(1) No person, firm, partnership, or corporation and including public agencies, shall be permitted to purchase explosives or blasting agents without a valid license as issued by the department of labor and industries.

(2) Applicants desiring to purchase explosives or blasting agents, except hand loader components as defined in this chapter, shall make application for license to the department of labor and industries. Application forms may be obtained at all department district offices, and from explosives dealers.

(3) Applicants shall comply with all requirements of WAC 296-52-421 and shall have a current user (blaster)

license issued by the department. The purchaser's license fee shall be five dollars.

(4) Applicants shall be required to furnish at least the following information:

- (a) The location where explosives are to be used;
- (b) The kind and amount of explosives to be used;
- (c) The name and address of the applicant;
- (d) The reason for desiring to use explosives;
- (e) The citizenship of the applicant, if the applicant is an individual;

(f) If the applicant is a partnership, the names and addresses of the partners and their citizenship;

(g) If the applicant is an association or corporation, the names and addresses of the officers and directors thereof and their citizenship;

(h) Documented proof of ownership of a licensed storage magazine or a signed authorization to use another person's licensed magazine; or the purchaser shall sign a statement certifying that the explosives will not be stored.

(i) Such other pertinent information as the director of the department of labor and industries shall require to effectuate the purposes of this chapter.

(5) The department will grant a purchaser's license after all legal requirements have been fulfilled.

(6) The license is valid for one year from date of issuance.

(7) Purchaser shall, prior to ordering explosive materials, furnish the dealer a current list of the representatives or agents authorized to order explosive materials on their behalf showing the name, address, drivers license number or valid identification and date and place of birth. A copy of the list shall be submitted with the purchaser's application. The dealer and the department lists shall be updated as changes occur.

(8) The individual who physically receives the purchased explosives shall prove to the satisfaction of the dealer that he, personally, is the purchaser, or the person authorized by the purchaser to receive said purchased explosives. Such authorization procedure shall be approved by the department. Said receiver of explosives shall identify himself properly and shall sign the dealer's record with his legal signature.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-433, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-433, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-433, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-433, filed 5/6/86.]

WAC 296-52-437 User's (blaster's) license. RCW 70.74.020 and 70.74.142, apply.

(1) No person, firm, partnership, or corporation shall use, blast, or dispose of explosives and/or blasting agents unless in possession of a valid user's (blaster's) license issued by the department of labor and industries.

(2) The application for a user's (blaster's) license to use, blast or dispose explosives and blasting agents shall be made to Department of Labor and Industries, Division of Consultation and Compliance, Olympia.

(a) Application forms may be obtained at all department district offices, and from explosives dealers.

(b) The license is valid for one year from date of issuance. The license fee shall be five dollars.

(c) Applicants shall comply with all requirements of WAC 296-52-421.

(d) User (blaster) may be required to verify name of licensed purchaser, which will be confirmed and approved by the department.

(3) In addition to the submission of the application form, all new applicants, all applicants requesting change in classification of their license, and all applicants who have not renewed their user (blaster) license within sixty days of expiration will be required to submit a resume of successful blasting experience, properly witnessed, and to pass a written examination prepared and administered by the department.

(4) User (blaster) qualifications:

(a) A user (blaster) shall be able to understand and give written and oral orders.

(b) A user (blaster) shall be in good physical condition and not be addicted to narcotics, intoxicants, or similar types of drugs. This rule does not apply to persons taking prescription drugs and/or narcotics as directed by a physician providing such use shall not endanger the worker or others.

(c) A user (blaster) shall be qualified by reason of training, knowledge, and experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of state and local laws and regulations which pertain to explosives.

(d) User (blaster) shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

(e) The user (blaster) shall be knowledgeable and competent in the use of each type of blasting method used.

(5) The department will issue a user's license card which shall state the limitations imposed on the licensee and shall be presented by the user to authorized persons, upon request, together with valid personal identification.

(6) A "hand loader" as defined in this chapter, does not require a user's license.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-437, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-437, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-437, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-437, filed 5/6/86.]

WAC 296-52-449 Storage magazine license fees. RCW 70.74.140, applies.

The annual license fee for operating each magazine has been established by the department and shall be as shown in the following table:

Maximum weight (pounds) of explosives permitted in each magazine	Maximum number of blasting caps permitted in each magazine	Annual fee (dollars) for each magazine
200	133,000	10.00
1,000	667,000	25.00
5,000	3,335,000	35.00
10,000	6,670,000	45.00
50,000	33,350,000	60.00
Max. 300,000	Max. 200,000,000	75.00

Any permanent magazine licensed for two years shall pay twice the license fee shown.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-449, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-449, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-449, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-449, filed 5/6/86.]

WAC 296-52-477 Quantity and distance table for separation between magazines. Magazines containing blasting caps and electric blasting caps shall be separated from other magazines containing like contents, or from magazines containing explosives by distances in the following table.

TABLE H-21
QUANTITY AND DISTANCE TABLE FOR SEPARATION BETWEEN MAGAZINES CONTAINING EXPLOSIVES

		Separation Distance in Feet Between Magazines	
Pounds Over	Pounds Not Over	Not	
		Barricaded	Barricaded
2	5	12	6
5	10	16	8
10	20	20	10
20	30	22	11
30	40	24	12
40	50	28	14
50	75	30	15
75	100	32	16
100	125	36	18
125	150	38	19
150	200	42	21
200	250	46	23
250	300	48	24
300	400	54	27
400	500	58	29
500	600	62	31
600	700	64	32
700	800	66	33
800	900	70	35
900	1,000	72	36
1,000	1,200	78	39
1,200	1,400	82	41
1,400	1,600	86	43
1,600	1,800	88	44
1,800	2,000	90	45
2,000	2,500	98	49
2,500	3,000	104	52
3,000	4,000	116	58
4,000	5,000	122	61
5,000	6,000	130	65
6,000	7,000	136	68
7,000	8,000	144	72
8,000	9,000	150	75
9,000	10,000	156	78
10,000	12,000	164	82
12,000	14,000	174	87
14,000	16,000	180	90
16,000	18,000	188	94
18,000	20,000	196	98
20,000	25,000	210	105
25,000	30,000	224	112
30,000	35,000	238	119
35,000	40,000	248	124
40,000	45,000	258	129
45,000	50,000	270	135
50,000	55,000	280	140
55,000	60,000	290	145
60,000	65,000	300	150
65,000	70,000	310	155

TABLE H-21
QUANTITY AND DISTANCE TABLE FOR SEPARATION BETWEEN MAGAZINES CONTAINING EXPLOSIVES

Pounds Over	Pounds Not Over	Separation Distance in Feet Between Magazines	
		Not Barricaded	Barricaded
70,000	75,000	320	160
75,000	80,000	330	165
80,000	85,000	340	170
85,000	90,000	350	175
90,000	95,000	360	180
95,000	100,000	370	185
100,000	110,000	380	195
110,000	120,000	410	205
120,000	130,000	430	215
130,000	140,000	450	225
140,000	150,000	470	235
150,000	160,000	490	245
160,000	170,000	510	255
170,000	180,000	530	265
180,000	190,000	550	275
190,000	200,000	570	285
200,000	210,000	590	295
210,000	230,000	630	315
230,000	250,000	670	335
250,000	275,000	720	360
275,000	300,000	770	385

- Note 1. The term "natural barricade" is defined in WAC 296-52-417.
- Note 2. Efficient artificial barricade is defined in WAC 296-52-417.
- Note 3. "Barricaded" means that a building containing explosives is effectually screened from a magazine, building, railway, or highway, either by a natural barricade, or by an artificial barricade of such height that a straight line from the top of any sidewall of the building containing explosives to the eave line of any magazine, or building, or to a point 12 feet above the center of a railway or highway, will pass through such intervening natural or artificial barricade.
- Note 4. This table applies only to the permanent storage of commercial explosives. It is not applicable to transportation of explosives, or any handling or temporary storage necessary or incident thereto. It is not intended to apply to bombs, projectiles, or other heavily encased explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-477, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-477, filed 3/6/95, effective 4/20/95; 90-03-029 (Order 89-20), § 296-52-477, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-477, filed 5/6/86.]

WAC 296-52-489 Transportation. (1) Regulations governing the transportation of explosives on public highways are adopted by the United States Department of Transportation (see 49 CFR Parts 100 through 199) and the Washington utilities and transportation commission and administered by the Washington state patrol.

(2) The regulations of this section shall be applicable in-and-on job sites and off-highway roads. The department of labor and industries shall administer these regulations in locations such as but not limited to: Construction or mining access roads and blast sites; off-highway forest roads including both publicly and privately owned logging roads, haul roads or general access roads.

Note: Examples of publicly owned off-highway roads where these regulations are applicable shall include, but are not limited to: U.S. Forest Service roads, Bureau of Land Management roads, state department of natural resources roads, but specifically not including the state or interstate highway system.

(a) No person shall be allowed to smoke, carry matches or any other flame-producing device, except guards or commissioned law enforcement officers, to carry any firearms or loaded cartridges while in or near a motor vehicle transporting explosives; or drive, load, or unload such vehicle in a careless or reckless manner.

(b) Explosives shall not be carried on any vehicle while vehicle is being used to transport workers other than driver and two persons.

(c) Explosives shall be transferred from a disabled vehicle to another, only when proper and qualified supervision is provided. Local fire and police departments shall be promptly notified in congested areas. In remote areas they shall be notified if appropriate.

(d) Other materials or supplies shall not be placed on, or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except carrying safety fuse, and properly secured, nonsparking equipment used expressly in the handling of such explosives will be permissible.

(3) Transportation vehicles.

(a) All vehicles used for transporting explosives shall be strong enough to carry the load without difficulty and be in good mechanical condition. The cargo compartment(s) shall have a tight floor and must not have any exposed spark producing metal on the inside which could come into contact with explosives cargo.

(b) Explosives vehicles used on any roadway which is open to public travel shall comply with WAC 296-52-550, Appendix II.

(c) Open top explosives transportation vehicles may only be used on the jobsite or on roads which are not open to public travel (while laden with explosives). In open top vehicles or trailers, explosives may only be transported in the original DOT approved shipping container(s)/box(es) or a daybox or portable magazine which complies with the requirements of this chapter. In all instances the explosive container(s), box(es), daybox or portable magazine shall be secured to the bed of the vehicle or trailer.

(i) If an explosives transportation vehicle or trailer does not have a fully enclosed cargo area with nonsparking interior, the cargo bed and all explosive cargo shall be covered with a flameproof and moisture-proof tarpaulin or other effective protection against moisture and sparks. Whenever tarpaulins are used for covering explosives, both the tarpaulin and the explosives container shall be secured to the body of the truck bed by means of rope, wire, or other equally efficient tie downs.

(ii) Packages of explosives shall not be loaded above the sides on open-sided vehicles.

(4) Vehicles shall be placarded and displayed as specified by the United States Department of Transportation, CFR 49-1981, Parts 100 through 199. Placards shall remain on the vehicle until all explosives have been removed from the vehicle.

(5)(a) Each motor vehicle used for transporting explosives shall be equipped with a minimum of two extinguishers, each having a rating of at least 2A 10BC. The driver shall be trained in the use of the extinguishers on the vehicle.

(i) Only extinguishers listed or approved by a nationally recognized testing laboratory shall be deemed suitable for use

on explosives-carrying vehicles. Refer to WAC 296-24-58501(19) for definition of listed, and federal regulation 29 CFR 1910.7 for nationally recognized testing laboratory.

(ii) Extinguishers shall be filled and ready for immediate use and readily available. Extinguishers shall be examined periodically by a competent person.

(b) A motor vehicle used for transporting explosives shall be given the following inspection to determine that it is in proper condition for safe transportation of explosives:

(i) Fire extinguishers shall be filled and in working order.

(ii) All electrical wiring shall be completely protected and securely fastened to prevent short-circuiting.

(iii) Chassis, motor, pan, and underside of body shall be reasonably clean and free of excess oil and grease.

(iv) Fuel tank and feedline shall be secure and have no leaks.

(v) Brakes, lights, horn, windshield wipers, and steering apparatus shall function properly.

(vi) Tires shall be checked for proper inflation and defects.

(vii) The vehicle shall be in proper condition in every other respect and acceptable for handling explosives.

(c) Motor vehicles or conveyances carrying explosives, blasting agents, or blasting supplies, shall not be taken inside a garage or shop for repairs or servicing.

(6) Operation of transportation vehicles.

(a) Vehicles transporting explosives shall only be driven by and be in the charge of a licensed driver who is not less than twenty-one years of age, physically fit, careful, capable, reliable, able to read and write the English language, and not addicted to the use, or under the influence of intoxicants, narcotics, or other dangerous drugs. This rule does not apply to persons taking prescription drugs and/or narcotics as directed by a physician providing such use shall not endanger the worker or others. They shall be familiar with the traffic regulations, state laws, and the provisions of this section.

(i) Explosives may only be transported by a licensed manufacturer, blaster, purchaser or seller, or the designated agent or representative thereof, or a contract carrier for hire who complies with all requirements for transportation of hazardous materials.

(ii) The person in control of the explosive laden vehicle shall be made aware of the nature of the cargo and pertinent safety precautions relating to the particular explosive(s) being transported.

(b) Parking. A motor vehicle which contains Class A or Class B explosives must not be parked under any of the following circumstances:

(i) On or within 5 feet of the traveled portion of a public street or highway;

(ii) On private property (including premises of a fueling or eating facility) without the knowledge and consent of the person who is in charge of the property and who is aware of the nature of the hazardous materials the vehicle contains; or

(iii) Within 300 feet of a bridge, tunnel, dwelling, building, or place where people work, congregate, or assemble, except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

(c) Every motor vehicle transporting any quantity of Class A or Class B explosives shall, at all times, be attended by a driver or other attendant of the motor carrier. This attendant shall have been made aware of the class of the explosive material in the vehicle and of its inherent dangers, and shall have been instructed in the measures and procedures to be followed in order to protect the public from those dangers. The attendant shall have been made familiar with the vehicle to which assigned, and shall be trained, supplied with the necessary means, and authorized to move the vehicle when required.

(i) For the purpose of this subdivision, a motor vehicle shall be deemed "attended" only when the driver or other attendant is physically on or in the vehicle, or has the vehicle within the driver or attendants field of vision and can reach it quickly and without any kind of interference; "attended" also means that the driver or attendant is awake, alert, and not engaged in other duties or activities which may divert their attention from the vehicle.

(ii) An explosive laden vehicle may be left unattended for a period not to exceed 48 hours provided that:

(A) The vehicle is parked in a designated parking lot which complies with NFPA Std. 498 and with the appropriate clearance table of this chapter for the type and quantity of explosives carried;

(B) The designated parking lot is correctly bermed and walled or fenced and gated to prevent unauthorized entry;

(C) The designated lot is inspected and approved by the department of labor and industries and is provided with a full-time security patrol at all times when explosives are present;

(D) Trucks used for explosives delivery which contain only blasting agents (International Class 1.5 D) and no high explosives need not be attended provided the vehicle is locked to prevent movement of the vehicle, the cargo compartments are locked to prevent theft, the vehicle is parked according to all applicable storage distance requirements, and the vehicle is located in a secured area which restricts entry to the area by unauthorized personnel.

(d) No spark-producing metal, spark-producing tools, oils, matches, firearms, electric storage batteries, flammable substances, acids, oxidizing materials, or corrosive compounds shall be carried in the body of any motor truck and/or vehicle transporting explosives, unless the loading of such dangerous articles and the explosives comply with U.S. Department of Transportation regulations.

(e) Vehicles transporting explosives shall avoid congested areas and heavy traffic.

(f) Delivery and issue of explosives shall only be made by and to authorized persons and into authorized magazines or authorized temporary storage or handling area.

(7) Transporting blasting caps and explosives in the same vehicle.

(a) Fuse type blasting caps, blasting caps with safety fuse and/or blasting caps with metal clad mild detonating fuse shall not be transported over the highways on the same vehicle or trailer with other explosives, unless packaged, segregated, and transported in accordance with the department of transportation's hazardous materials regulations.

(b) Blasting caps rated by U.S. DOT as nonmass detonating may be transported in the same vehicle or trailer with other explosives when:

(i) The caps are carried in DOT approved shipping containers:

(ii) The truck or trailer complies with Appendix 1, WAC 296-52-550.

(8) When primers are made up at a central primer house for use in high speed tunneling, the following shall apply:

(a) Only enough primers shall be made up for each round of blasting.

(b) The primers shall be placed in separate containers or bins, categorized by degree of delay in such a manner so as to prevent them from physical impact.

(c) Explosives carried in the same magazine shall be separated by 1/4-inch steel, covered on each side by four inches of hardwood planking, or equivalent.

(d) Hoist operators shall be notified before explosives or blasting agents are transported in a shaft conveyance.

(e) Explosives and blasting agents shall be hoisted, lowered, or conveyed in a powder car. No other materials, supplies, or equipment shall be transported in the same conveyance at the same time.

(f) Only a state approved powder car or conveyance shall be used underground.

(g) All explosives or blasting agents in transit underground shall be taken to the place of use or storage without delay.

(h) The quantity of explosives or blasting agents taken to an underground loading area shall not exceed the amount estimated to be necessary for the blast.

(i) The number of primers for one round will be removed from the state approved car or vehicle at the face or heading after the drilling has been completed and the holes readied for loading. After loading the charge, the powder car or vehicle will be withdrawn from the tunnel.

(j) Wires on electric caps shall be kept shunted until wired to the bus wires.

(k) The powder car or conveyance shall be inspected daily for lights, brakes and external damage to electrical circuitry. The electrical system shall be checked weekly to detect any failures that may constitute an electrical hazard and a written certification record of such inspection shall be kept on file for the duration of the job. The certification record shall contain the date of inspection, the serial number or other positive identification of the unit being inspected and the signature of the person performing the inspection.

(l) The installation of auxiliary lights on truck beds, which are powered by the truck's electrical system, shall be prohibited.

(m) No one, except the operator, the helper, and/or the powderperson, shall be permitted to ride on a conveyance transporting explosives and blasting agents.

(n) No person shall ride in any shaft conveyance transporting explosives and blasting agents.

(o) No explosives or blasting agents shall be transported on a crew-haul trip.

(p) The car or conveyance containing explosives or blasting agents shall be pulled, not pushed, whenever possible.

(q) The powder car or conveyance especially built for the purpose of transporting explosives or blasting agents shall bear a reflectorized sign on each side with the word "explosives" in letters not less than 4 inches in height; upon a background of sharply contrasting color.

(r) Compartments for transporting detonators and explosives in the same car or conveyance shall be physically separated by a distance of 24 inches or by a solid partition at least 6 inches thick.

(s) Detonators and other explosives shall not be transported at the same time in any shaft conveyance.

(t) Explosives and/or blasting agents, not in original containers, shall be placed in a suitable container when transported manually.

(u) No explosives or blasting agents shall be transported on any locomotive. At least two car lengths shall separate the locomotive from the powder car.

(9) When explosives are carried to the blasting site from the main storage magazines by the blaster or helper:

(a) Special insulated containers or original DOT shipping containers shall be used for this purpose, either boxes or bags, one container for explosives and one for detonators.

(b) Detonators or explosives shall never be carried in pockets of clothing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-489, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.040. 98-19-056, § 296-52-489, filed 9/15/98, effective 11/8/98. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-489, filed 3/6/95, effective 4/20/95; 92-17-022 (Order 92-06), § 296-52-489, filed 8/10/92, effective 9/10/92; 91-03-044 (Order 90-18), § 296-52-489, filed 1/10/91, effective 2/12/91; 88-23-054 (Order 88-25), § 296-52-489, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-489, filed 5/6/86.]

WAC 296-52-493 Use of explosives and blasting agents. (1) General provisions.

(a) While explosives are being handled or used, smoking, matches, or any other source of fire or flame shall not be allowed within 100 feet of the blast site. No person shall be allowed to handle explosives while under the influence of intoxicating liquors, narcotics, or other dangerous drugs. This rule does not apply to persons taking prescription drugs and/or narcotics as directed by a physician providing such use shall not endanger the worker or others.

(b) Original containers or day box magazines shall be used for taking detonators and other explosives from storage magazines to the blast site.

(c) When blasting is done in congested areas or in close proximity to a structure, railway, or highway or any other installation that may be damaged, the blast shall be covered before firing with a mat or other suitable protective material that is capable of preventing fragments from being thrown.

(d) Persons authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution, including but not limited to warning signals, flags and barricades or blasting mats to insure the safety of the general public and workers.

(e) Blasting operations shall be conducted during daylight hours whenever possible.

(f) Whenever blasting is being conducted in the vicinity of gas, electric, water, fire alarm, telephone, telegraph, and

steam utilities, the user (blaster) shall notify the appropriate representatives of such utilities at least twenty-four hours in advance of blasting, specifying the location and intended time of such blasting. Verbal notice shall be confirmed with written notice. The blaster shall ensure that appropriate measures for safe control have been taken.

(g) Due precaution shall be taken to prevent unintended discharge of blasting caps from extraneous electric current or from transmitted radio frequency (RF) energy. Examples:

Common sources of extraneous electricity include but are not limited to adjacent powerlines, dust storms and lightning storms.

Common sources of hazardous RF transmissions include but are not limited to: (MOBILE) citizen band (CB) or side band radio transmitters, VHF (FM) radio transmitters, UHF cellular telephones and radar transmitters. (FIXED LOCATION TRANSMITTERS) base stations for CB, side band or FM radio communications, UHF cellular telephone transmitters and service extension repeater systems, AM and FM (commercial) radio broadcast transmitters, TV broadcast transmitters and repeater system transmitters, surface scan and radio navigation beacons.

(h) Low flying aircraft and in particular military aircraft create the most common serious RF exposures. These highly unpredictable mobile transmitters are very powerful and transmit on a broad spectrum of frequencies including radar, laser and all common communications bands. Probably the two most dangerous examples are low flying automatic terrain following guidance systems and airplanes which are equipped to jam all common radar and communications frequencies for a distance of several miles around the airborne transmitters.

(i) Precautions to prevent unintended discharge of electric blasting caps from extraneous electric currents or RF transmission shall include:

(i) Positive identification of voltages in electrical transmission and distribution lines and specific required clearance for each specific system; and

(ii) Complete suspension of all blasting operations and removal of all personnel from the blast site during the approach and progress of heavy dust storms which may create static lightning or conventional thunder and lightning storms; and

(iii) The posting of signs warning against the use of radio frequency transmitters including CBs, mobile phones and two-way radios. The required signs shall be placed in a manner to adequately warn transmitter users, including all routes into the required clearance zone around where electric blasting caps are used.

(A) The required clearance zone for construction and/or demolition operations shall be 1000 feet;

(B) The required clearance zone for general industry operations which are not subject to construction requirements shall be 350 feet.

Note: See Appendix II, WAC 296-52-552 for illustrations and specific posting requirements.

(iv) Ensuring that mobile RF transmitters which are less than 100 feet away from electrical blasting caps are deener-

gized or disconnected when the caps are not fully contained in the original DOT shipping containers; and

(v) Fixed location RF transmitters represent a higher level of hazard to both storage and/or blasting operations involving electric caps because the transmitters are more powerful and transmit dangerous levels of RF exposure over much greater distances. Storage or blasting operations with electric caps shall only be carried out in full compliance with the appropriate recommended distance tables published in *INSTITUTE OF MAKERS OF EXPLOSIVES (I.M.E.) Publication No. 20, 1988, "SAFETY GUIDE FOR THE PREVENTION OF RADIO FREQUENCY HAZARDS IN THE USE OF COMMERCIAL ELECTRIC DETONATORS (Blasting Caps)"*; and

(vi) When necessary to conduct blasting operations within the required separation distances specified in I.M.E. Pamphlet 20-1988, the storage and use of electric blasting caps shall be prohibited on the site and only detonating cord, safety fuse, shock tube or other approved nonelectric systems may be used.

(j) No fire shall be fought where the fire is in imminent danger of contact with explosives. All employees shall be removed to a safe area and the fire area guarded against intruders.

(k) Electric detonators shall be shunted until wired into the blasting circuit.

(l) Explosives shall not be handled near open flames, uncontrolled sparks or energized electric circuits.

(m) Delivery and issue of explosives shall only be made by and to authorized persons and into authorized magazines or approved temporary storage or handling area.

(n) Blaster in charge.

(i) The blast site shall be under the control of a fully qualified and currently licensed "blaster in charge" throughout the course of every blasting operation. That obligation shall commence with a site survey to determine potential safety conflicts with: Public utility transmission systems, dwellings or other occupied buildings, roads or railroads, radio frequency transmitters, preexisting explosives storage magazines.

(ii) Whenever the site survey identifies conditions which conflict with safe blasting operations, the blaster in charge shall prepare a written site blasting plan before beginning blasting operations. The written plan shall identify the methods, materials, procedures and/or engineering calculations which will be used to address each identified conflicting condition.

Note 1. When the site survey identifies that no conflicting conditions exist, a written blasting plan is not required.

Note 2. Written blasting plans may be discarded at the end of a job provided that no blasting incident has occurred which resulted in bodily injury or property damage.

(iii) All on-site transportation, storage, loading and firing of explosives shall be supervised by the blaster in charge. Trainees and inexperienced personnel shall work only under direct supervision of licensed personnel fully qualified in the blasting method in use, including safety procedures and blasting signals in use at that site.

(iv) The site blasting plan shall include designated safe location(s) for personnel during actual blasting and a method

for determining when all personnel are accounted for in the designated safe location(s).

Note: It is desirable that all potential means of egress into the blast site should be under observation immediately prior to each blast. The observer(s) should be provided with a means of communication with the blaster in charge.

(o) The employer shall permit only competent and authorized personnel to handle explosives.

(p) No explosive shall be loaded or used underground in the presence of combustible gases or combustible dusts unless approved as permissible by MSHA.

(q) In either electric or nonelectric blasting, the firing line(s) shall not be connected to the blast initiating device until all personnel have been accounted for and removed from the blast danger area or are in a blast shelter or other location which affords adequate protection.

(2) Storage at use sites.

(a) Empty boxes and paper and fiber packing materials which have previously contained explosive materials shall be disposed of in a safe manner, or reused in accordance with the department of transportation's hazardous materials regulations.

(b) When opening kegs or wooden cases, no sparking metal tools shall be used; wooden wedges and either wood, fiber or rubber mallets shall be used. Nonsparking metallic slitters may be used for opening fiberboard cases.

(c) Should cartridges or packages of explosives show signs of deterioration, the manufacturer or the department shall be notified. Such explosives must be carefully set aside and properly disposed of.

(3) Loading of explosives or blasting agents in blast holes.

(a) Procedures that permit safe and efficient loading shall be established before loading is started.

(b) All drill holes shall be sufficiently large to admit freely the insertion of the cartridges of explosives. Holes shall be checked prior to loading to determine depth and conditions.

(c) Tamping shall be done only with wood rods or with approved plastic tamping poles without exposed metal parts, but nonsparking metal connectors may be used for jointed poles. Violent tamping shall be avoided. The primer shall never be tamped.

(d) No holes shall be loaded except those to be fired in the next round of blasting. After loading, all remaining explosives and detonators shall be immediately returned to an authorized magazine or day box.

(e) Drilling shall not be started until all remaining butts of old holes are examined for unexploded charges, and if any are found, they shall be refired before work proceeds.

(f) When a charge of explosives has been exploded in a bore hole to enlarge or "spring" it, an interval of at least two hours must be allowed to pass before an additional charge of explosives can be loaded into the hole.

Note: There may be an exception made to this rule provided the sprung hole is thoroughly wet down with water before it is loaded.

(g) No person shall be allowed to deepen drill holes which have contained explosives or blasting agents.

(h) No explosives or blasting agents shall be left unattended at blast sites unless stored in a licensed magazine.

(i) Users (blasters) shall not load, store or use explosives closer than the length of the steel being used for drilling and in no event nearer than fifty feet of drilling operations.

(j) Machines and all tools not used for loading explosives into bore holes shall be removed from the immediate location of holes being loaded with explosives. Equipment shall not be operated within 50 feet of loaded holes except when equipment is needed to add burden, mats or tracking of drills out of the loading area.

(k) Powerlines and portable electric cables for equipment being used shall be kept a safe distance from explosives or blasting agents being loaded into drill holes. Cables in the proximity of the blast area shall be deenergized and locked out by the blaster.

(l) Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

(m) All blast holes in open work shall be stemmed to the collar or to a point which will confine the charge.

(n) No explosives for underground operations other than those in Fume Class 1, as set forth by the Institute of Makers of Explosives, shall be used; however, explosives complying with the requirements of Fume Class 2 and Fume Class 3 may be used if adequate ventilation has been provided.

(o) Warning signs, indicating a blast area, shall be maintained at all approaches to the blast area. The warning sign lettering shall not be less than 4 inches in height on a contrasting background. All loaded stumps must be marked for identification on logging sites.

(p) A bore hole shall never be sprung when it is adjacent to or near a hole which has been loaded. Flashlight batteries shall not be used as a power source (blasting machine) for springing holes.

(q) No loaded holes shall be left unattended or unprotected.

(r) The user (blaster) shall keep an accurate, up-to-date record of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operation.

(s) When loading blasting agents pneumatically over primed boosters, semiconductive delivery hose shall be used and the equipment shall be bonded and grounded.

(4) Initiation of explosive charges - electric blasting.

(a) Blasting cap leg wires shall be kept short-circuited (shunted) until they are connected into the circuit for firing.

(b) Before adopting any system of electrical firing, the user (blaster) shall conduct a thorough survey for extraneous currents, and all dangerous currents shall be eliminated before any holes are loaded.

(c) In any single blast using electric blasting caps, all caps shall be of the same style or function and be of the same manufacture and compatible with each other.

(d) Electric blasting shall be carried out by using blasting circuits or power circuits in accordance with the electric blasting cap manufacturer's recommendations.

(e) The firing line shall be checked with an approved testing device at the terminals before being connected to the blasting machine or other power source.

(f) The circuit including all caps shall be tested with an approved testing device before being connected to the firing line.

(g) When firing a circuit of electric blasting caps, care shall be exercised to ensure that an adequate quantity of delivered current is available, in accordance with the manufacturer's recommendations.

(h) Connecting wires and lead wires shall be insulated single solid wires of sufficient current-carrying capacity, and shall not be less than twenty gauge (American wire gauge) solid core insulated wire.

(i) Firing line or lead wires shall be solid single wires of sufficient current-carrying capacity, and shall be not less than fourteen gauge (American wire gauge) solid core insulated wire. Bus wires - depends on the size of the blast, fourteen gauge (American wire gauge) copper is recommended.

(j) The ends of lead wires which are to be connected to a firing device shall be shorted by twisting them together or otherwise shunting them before they are connected to the leg wires or connecting wires, and they shall be kept in the control of the person who is doing the loading until loading is completed and the leg wires attached. Lead wires shall not be attached to the firing device until the blaster is ready to fire the shot and must be attached by the user (blaster) themselves.

(k) The ends of the leg wires on electric detonators shall be shorted in a similar manner and not separated other than for testing until all holes are loaded and the loader is ready to connect the leg wires to the connecting wires or lead wires.

(l) When firing electrically, the insulation on all firing lines shall be adequate and in good condition.

(m) A power circuit used for firing electric blasting caps shall not be grounded.

(n) In underground operations when firing from a power circuit, a safety switch shall be placed at intervals in the permanent firing line. This switch shall be made so it can be locked only in the "off" position and shall be provided with a short-circuiting arrangement of the firing lines to the cap circuit.

(o) In underground operations there shall be a "lightning" gap of at least 5 feet in the firing system ahead of the main firing switch; that is, between this switch and the source of power. This gap shall be bridged by a flexible jumper cord just before firing the blast.

(p) When firing from a power circuit, the firing switch shall be locked in the open or "off" position at all times, except when firing. It shall be so designed that the firing lines to the cap circuit are automatically short-circuited when the switch is in the "off" position. Keys to this switch shall be entrusted only to the user (blaster).

(q) Blasting machines shall be in good condition and the efficiency of the machine shall be tested periodically to make certain that it can deliver power at its rated capacity.

(r) When firing with blasting machines, the connections shall be made as recommended by the manufacturer of the electric blasting caps used.

(s) The number of electric blasting caps connected to a blasting machine shall not be in excess of its rated capacity. Furthermore, in primary blasting, a series circuit shall contain

no more caps than the limits recommended by the manufacturer of the electric blasting caps in use.

(t) The blaster in charge shall be in charge of the blasting machines, and no other person shall connect the lead wires to the machine.

(u) Users (blasters), when testing circuits to charged holes, shall use only blasting testers especially designed for this purpose.

(v) Whenever the possibility exists that a lead line or blasting wire might be thrown over live overhead powerlines, communication lines, utility services, or other services or structures by the force of an explosion, care shall be taken to see that the total length of wires are kept too short to hit the lines, that the wires are securely anchored to the ground and owners or operators are notified. If those requirements can not be satisfied, a nonelectric system shall be used.

(w) In electrical firing, only the person making lead wire connections shall fire the shot. All connections shall be made from the bore hole back to the source of firing current, and the lead wires shall remain shorted and not be connected to the blasting machine or other source of current until the charge is to be fired.

(x) After firing an electric blast from a blasting machine, the leading wires shall be immediately disconnected from the machine and short-circuited.

(y) When electric blasting caps have been used, workers shall not return to misfired holes for at least thirty minutes.

(5) Use of safety fuse.

(a) A fuse that is deteriorated or damaged in any way shall not be used.

(b) The hanging of fuse on nails or other projections which will cause a sharp bend to be formed in the fuse is prohibited.

(c) Before capping safety fuse, a short length shall be cut from the end of the supply reel so as to assure a fresh cut end in each blasting cap.

(d) Only a cap crimper of approved design shall be used for attaching blasting caps to safety fuse. Crimpers shall be kept in good repair and accessible for use.

(e) No unused cap or short capped fuse shall be placed in any hole to be blasted; such unused detonators shall be removed from the working place and disposed of or stored in licensed magazine.

(f) No fuse shall be capped, or primers made up, in any magazine or near any possible source of ignition.

(g) Capping of fuse and making of primers shall only be done in a place selected for this purpose and at least one hundred feet distant from any storage magazine.

(h) Fuse must be cut long enough to reach beyond the collar of the bore hole and in no case less than three feet. When shooting choker holes, not less than three feet of fuse shall be used.

(i) At least two persons shall be present when multiple cap and fuse blasting is done by hand lighting methods.

(j) Not more than 12 fuses shall be lighted by each blaster when hand lighting devices are used. However, when two or more safety fuses in a group are lighted as one by means of igniter cord, or other similar fuse-lighting devices, they may be considered as one fuse.

(k) The so-called "drop fuse" method of dropping or pushing a primer or any explosive with a lighted fuse attached is prohibited.

(l) Cap and fuse shall not be used for firing mudcap charges unless charges are separated sufficiently to prevent one charge from dislodging other shots in the blast.

(m) When blasting with safety fuses, consideration shall be given to the length and burning rate of the fuse. Sufficient time, with a margin of safety, shall always be provided for the blaster to reach a place of safety.

(n) The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all workers concerned with blasting. No fuse shall be used that burns faster than one foot in forty seconds or slower than one foot in fifty-five seconds.

(o) For use in wet places the joint between the cap and fuse shall be waterproofed with a compound prepared for this purpose.

(p) In making up primers only nonsparking skewers shall be used for punching the hole in the cartridge to insert the capped fuse. No blasting cap shall be inserted in the explosives without first making a hole in the cartridge of proper size or using a standard cap crimper.

(q) Only sufficient primers for one day's use shall be made up at one time. They shall be stored in a box type magazine in which no other explosives are stored.

(r) Any loose cartridges of explosives, detonators, primers and capped fuse unused at the end of the shift shall be returned to their respective magazines and locked up.

(s) Safety fuse and caps shall only be used for conventional blasting where:

(i) Extraneous electricity or radio frequency transmissions make the use of electric cap and wire systems dangerous;

(ii) Overhead electric transmission lines cannot be deenergized and there is danger that blasting wires may be thrown into the overhead lines during a blast;

(iii) For avalanche control hand charges;

(iv) For specialized applications where cap and fuse is more suitable than electric or other nonelectric initiation systems.

(6) Use of detonating cord.

(a) Care shall be taken to select a detonating cord consistent with the type and physical condition of the bore hole and stemming and the type of explosives used.

(b) Detonating cord shall be handled and used with the same respect and care given other explosives.

(c) For quantity and distance purposes detonating fuse up to 60 grains per foot should be calculated as equivalent to 9 lbs. of high explosives per 1,000 feet. Heavier cord loads should be rated proportionately.

(d) Trunk lines in multiple-row blasts shall make one or more complete loops, with crossties between loops at intervals of not over two hundred feet.

(e) All detonating cord knots shall be tight and all connections shall be kept at right angles to the trunk lines.

(f) The line of detonating cord extending out of a bore hole or from a charge shall be cut from the supply spool before loading the remainder of the bore hole or placing additional charges.

(g) Detonating cord shall be handled and used with care to avoid damaging or severing the cord during and after loading and hooking-up.

(h) Detonating cord connections shall be competent and positive in accordance with approved and recommended methods. Knot-type or other cord-to-cord connections shall be made only with detonating cord in which the explosive core is dry.

(i) All detonating cord trunklines and branchlines shall be free of loops, sharp kinks, or angles that direct the cord back toward the oncoming line of detonation.

(j) All detonating cord connections shall be inspected before firing the blast.

(k) When detonating cord millisecond-delay connectors or short-interval-delay electric blasting caps are used with detonating cord, the practice shall conform strictly to the manufacturer's recommendations.

(l) When connecting a blasting cap or an electric blasting cap to detonating cord, the cap shall be taped or otherwise attached securely along the side or the end of the detonating cord, with the end of the cap containing the explosive charge pointed in the direction in which the detonation is to proceed.

(m) Detonators for firing the trunkline shall not be brought to the loading area nor attached to the detonating cord until everything else is in readiness for the blast.

(7) Initiation of explosive charges - nonelectric blasting.

(a) All nonelectric initiation systems and components of these systems shall be used in accordance with their manufacturer's recommendations and instructions.

(b) All members of the blasting crew shall be instructed in the safe use of the initiation system and its components. It shall be the duty of the blaster in charge to provide adequate on-the-job training and supervision in the safe use of such systems.

(c) When a nonelectric shock tube initiation system is used, the tubing shall be free of all knots and tight kinks. The shock tube shall be free of cuts or abrasions that could expose the core to moisture.

(d) All blasting operations shall cease during the approach and progress of a thunderstorm, regardless of the type of initiation system used, and all personnel shall withdraw to a place of safety.

(e) When an explosive bulk truck or other vehicle is operated on a blast site, care shall be taken to ensure that the vehicle does not tread on the tubing, connectors, or any surface delay component. If a vehicle operated on a blast site must pass over loaded blastholes, precautions shall be made to consolidate these elements at the collar of the hole to prevent vehicle contact.

(f) Before firing the shot, the blaster in charge shall make a visual inspection to ensure that the initiation system is hooked up in accordance with the manufacturer's recommendations.

(8) Firing the blast.

(a) A code of blasting signals equivalent to Table T-1 shall be posted on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it. Warning signs shall be placed at suitable locations.

(b) All charges shall be covered with blasting mats or other protective material before firing, where blasting may cause injury or damage by flying rock or debris.

(c) Before a blast is fired, a loud warning signal shall be given by the blaster in charge, who has made certain that all surplus explosives are in a safe place and all employees, vehicles, and equipment are at a safe distance, or under sufficient cover.

(d) Flaggers shall be safely stationed on highways which pass through the danger zone so as to stop traffic during blasting operations.

(e) It shall be the duty of the blaster to fix the time of blasting. The blaster shall conduct all blasting operations and no shot shall be fired without the blaster's approval.

(f) Before firing an underground blast, warning shall be given, and all possible entries into the blasting area, and any entrances to any working place where a drift, raise, or other opening is about to hole through, shall be carefully guarded. The blaster shall make sure that all employees are out of the blast area before firing a blast.

TABLE T-1

WARNING SIGNAL	— A 1-minute series of long blasts 5 minutes prior to blast signal.
BLAST SIGNAL	— A series of short blasts 1 minute prior to the shot.
ALL CLEAR SIGNAL	— A prolonged blast following the inspection of blast area.

(9) Inspection after blasting.

(a) Immediately after the blast has been fired, the firing line shall be disconnected from the blasting machine, or where power switches are used, they shall be locked open or in the off position.

(b) Sufficient time shall be allowed, not less than fifteen minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. An inspection of the area and the surrounding rubble shall be made by the user (blaster) to determine if all charges have been exploded before employees are allowed to return to the operation, and in tunnels, after the muck pile has been wetted down.

(10) Misfires.

(a) If a misfire is found, the user (blaster) shall provide proper safeguards for excluding all employees or other personnel from the danger zone.

(b) No other work shall be done except that necessary to remove the hazard of the misfire and only those employees necessary to do the work shall remain in the danger zone.

(c) No attempt shall be made to extract explosives from any charged or misfired hole; a new primer shall be put in and the hole reblasted. If refiring of the misfired hole presents a hazard, the explosives may be removed by washing out with water or, where the misfire is under water, blown out with air.

(d) If there are any misfires while using cap and fuse, all employees shall remain away from the charge for at least one hour. Misfires shall be handled under the direction of the person in charge of the blasting.

(e) When electric blasting caps have been used, workers shall not return to misfired holes for at least thirty minutes.

All wires shall be carefully traced and a search made for unexploded charges.

(f) If explosives are suspected of burning in a hole, all persons in the endangered area shall move to a safe location and no one shall return to the hole until the danger has passed, but in no case within one hour.

(g) No drilling, digging, or picking shall be permitted until all missed holes have been detonated or the authorized representative has approved that work can proceed.

(11) Underwater blasting.

(a) A user (blaster) shall conduct all blasting operations, and no shot shall be fired without the blaster's approval.

(b) Loading tubes and casings of dissimilar metals shall not be used because of possible electric transient currents from galvanic action of the metals and water.

(c) Only water-resistant initiation systems shall be used for underwater blasting. Loading shall be done through a nonsparking loading tube when tube is necessary.

(d) No blast shall be fired while any vessel under way is closer than 1,500 feet to the blasting area. Those on board vessels or craft moored or anchored within 1,500 feet shall be notified before a blast is fired.

(e) No blast shall be fired while any swimming or diving operations are in progress in the vicinity of the blasting area. If such operations are in progress, signals and arrangements shall be agreed upon to assure that no blast shall be fired while any persons are in the water.

(f) Blasting flags shall be displayed.

(g) The storage and handling of explosives aboard vessels used in underwater blasting operations shall be according to provisions outlined herein on handling and storing explosives.

(h) When more than one charge is placed under water, a float device shall be attached to an element of each charge in such manner that it will be released by the firing. Misfires shall be handled in accordance with the requirements of WAC 296-52-493(10).

(12) Blasting in excavation work in pressurized air locks.

(a) Detonators and explosives shall not be stored or kept in tunnels, shafts, or caissons. Detonators and explosives for each round shall be taken directly from the magazines to the blasting zone and immediately loaded. Detonators and explosives left over after loading a round shall be removed from the working chamber before the connecting wires are connected up. Explosives in transit shall not be left unattended.

(b) When detonators or explosives are brought into an air lock, no employee except the powderperson, user (blaster), lock tender and the employees necessary for carrying, shall be permitted to enter the air lock. No material, supplies, or equipment shall be brought through with the explosives.

(c) Primers, detonators and explosives shall be taken separately into pressure working chambers.

(d) The user (blaster) or powderperson shall be responsible for the receipt, unloading, storage, and on-site transportation of explosives and detonators.

(e) All metal pipes, rails, air locks, and steel tunnel lining shall be electrically bonded together and grounded at or near the portal or shaft, and such pipes and rails shall be cross-bonded together at not less than 1,000-foot intervals through-

out the length of the tunnel. In addition, each air supply pipe shall be grounded at its delivery end.

(f) The explosives suitable for use in wet holes shall be water-resistant and shall be Fume Class 1, or other approved explosives.

(g) When tunnel excavation in rock face is approaching mixed face, and when tunnel excavation is in mixed face, blasting shall be performed with light charges and with light burden on each hole. Advance drilling shall be performed as tunnel excavation in rock face approaches mixed face, to determine the general nature and extent of rock cover and the remaining distance ahead to soft ground as excavation advances.

(13) Vibration and damage control. Blasting operations in or adjacent to cofferdams, piers, underwater structures, buildings, structures, or other facilities shall be carefully planned with full consideration for all forces and conditions involved.

(14) Black blasting powder shall not be used for blasting.

(15) No person shall store, handle, or transport explosives or blasting agents when such storage, handling, and transportation of explosives or blasting agents constitutes an undue hazard to life.

(16) It shall be unlawful for any person to abandon explosives or explosive substances.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-493, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-493, filed 3/6/95, effective 4/20/95; 92-17-022 (Order 92-06), § 296-52-493, filed 8/10/92, effective 9/10/92; 91-03-044 (Order 90-18), § 296-52-493, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-493, filed 5/6/86.]

Chapter 296-54 WAC

SAFETY STANDARDS—LOGGING OPERATIONS

WAC

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296-54-58970	Log trucks—Steered trailers.	296-54-99009	Appendix I—Figure 9—Hayrack boom loading. [Order 72-14, Figure 9 (codified as WAC 296-54-99009), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-591	Stationary log truck trailer loading.		
296-54-593	Log unloading, booms, and rafting grounds—Storage and sorting areas—General.	296-54-99010	Appendix I—Figure 10—Spreader bar loading. [Order 72-14, Figure 10 (codified as WAC 296-54-99010), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-59310	Log unloading, booms, and rafting grounds—Water dumps.		
296-54-59320	Log unloading, booms, and rafting ground—Boom and rafting grounds.		
296-54-59330	Log unloading, booms, and rafting grounds—Boats and mechanical devices on waters.		
296-54-59340	Log unloading, booms, and rafting grounds—Dry land sorting and storage.		
296-54-595	Transporting crews.		
296-54-59510	Speeders used to transport crews.		
296-54-59520	Trailers used to transport crews.		
296-54-597	Railroads.		
296-54-59710	Railroad construction and maintenance.		
296-54-59720	Railroad operations.		
296-54-59730	Railroad maintenance—Loading or unloading.		
296-54-599	Repealed.		
296-54-601	Signals and signal systems.		
296-54-603	Electric signal systems.		
296-54-604	Radio signaling permits.		
296-54-605	Radio systems used for voice communication, activation of audible signals, or control of equipment.		

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-54-525	Railroad construction and maintenance. [Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-525, filed 9/21/79.] Repealed by 99-17-117, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-54-559	Yarding—Helicopters and helicopter cranes. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-559, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-559, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-05-013 (Order 81-3), § 296-54-559, filed 2/10/81. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-559, filed 9/21/79.] Amended and decodified by 99-17-117, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-599	Truck and equipment maintenance shops. [Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-599, filed 9/21/79.] Repealed by 99-17-117, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-99007	Appendix I—Figure 7—Heel boom loading. [Order 72-14, Figure 7 (codified as WAC 296-54-99007), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-99008	Appendix I—Figure 8—Guyline loading. [Order 72-14, Figure 8 (codified as WAC 296-54-99008), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-99009	Appendix I—Figure 9—Hayrack boom loading. [Order 72-14, Figure 9 (codified as WAC 296-54-99009), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-54-99010	Appendix I—Figure 10—Spreader bar loading. [Order 72-14, Figure 10 (codified as WAC 296-54-99010), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-54-501 Scope and application. This chapter establishes safety practices for all types of logging, log road construction and other forest activities using logging machinery and/or power saws regardless of the end use of the wood. This chapter does not apply to log handling at sawmills, plywood mills, pulp mills, or other manufacturing operations governed by specific safety standards. This chapter provides minimum safety requirements for the logging industry. The logging industry is also covered by the general safety standards, chapter 296-24 WAC; occupational health standards,

chapter 296-62 WAC; or others that may apply. Chapter 296-52 WAC, which covers the possession, handling and use of explosives, applies when explosives are used in logging operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-501, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-501, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-501, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-501, filed 9/21/79.]

WAC 296-54-503 Variance. If an employer finds it impractical to comply with specific requirements of this chapter, the department may permit a variation from the requirements. However, the employer must still provide equal protection by substitute means. To request a variance, write to:

WISHA Services Division—Variance Request
Department of Labor & Industries
P.O. Box 44648
Olympia, WA 98504-4648

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-503, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-503, filed 9/21/79.]

WAC 296-54-505 Definitions. A-frame - a structure made of two independent columns fastened together at the top and separated by a reasonable width at the bottom to stabilize the unit from tipping sideways.

An operation - any place where logging or log related activities are taking place.

Approved - approved by the department of labor and industries.

Arch - any device attached to the back of a vehicle and used for raising one end of logs to facilitate movement.

Authorized person - a person approved or assigned by the employer to perform a specific type of duty(s) or to be at a specific location at a certain time(s).

Backcut (felling cut) - the cut in a felling operation made on the opposite side from the undercut.

Backline - the portion of the haulback that runs between the spar/spar tree and the corner block.

Ballistic nylon - a nylon fabric of high tensile properties designed to provide protection from lacerations.

Barrier - a fence, wall or railing to prevent passage or approach.

Base of tree - that portion of a natural tree not more than three feet above ground level.

Bight of the line - a hazardous zone created by running lines under tension. Any section of a line between the ends.

Binder - a hinged lever assembly for connecting the ends of a wrapper to tighten the wrapper around the load of logs or materials.

Boomboat - any boat used to push or pull logs, booms, bundles, or bags, in booming ground operations.

Boomscooter - a small boat, usually less than fourteen feet in length, equipped with an outboard motor, having directional pushing capabilities of 360 degrees.

Brailing - when tiers of logs, poles, or piles are fastened together with a type of dogline and the ends of the side members are then fastened together for towing.

Brow log - a log or a suitable substitute placed parallel to any roadway at a landing or dump to protect the carrier and facilitate the safe loading or unloading of logs, timber products, or materials.

Buck - means the process of severing a tree into sections (logs or bolts).

Butt - the bottom of the felled part of a tree.

Butt welding - the practice of welding something end to end.

Cable tree thinning - the selective thinning of a timber stand using mobile yarding equipment specifically designed or adapted for the purpose. Cable tree thinning includes skyline, slackline, or modified slackline, overhead cable systems.

Cable yarding - the movement of felled trees or logs from the area where they are felled to the landing on a system composed of a cable suspended from spars and/or towers. The trees or logs may be either dragged across the ground on the cable or carried while suspended from the cable.

Chock - a block, often wedge shaped, which is used to prevent movement; e.g., a log from rolling, a wheel from turning.

Choker - a length of wire rope with attachments for encircling the end of a log to be yarded.

Chunking - to clear nonusable material from a specified area.

Cold deck - a pile of yarded logs left for future removal.

Competent person - one who is capable of identifying hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous.

Corner block - the first block the haulback passes through on its way to the tail block.

Crotch line - two short lines attached to the same ring or shackle, used for loading or unloading.

Cutter - an employee whose primary job is to fall, buck, or limb trees before they are moved to the landing area.

Danger trees - any tree of any height, dead or alive, that presents a hazard to workers because of rot, root, stem or limb damage, lean, or any other observable condition created by natural process or man-made activity.

Dapped - a notch in a timber for receiving part of another timber.

DBH - diameter at breast height.

Deadman - buried log or other object used as an anchor.

Debark - to remove bark from trees or logs. Debark generally denotes mechanical means as opposed to manual peeling.

Deck - a stack of trees or logs.

Designated person - an employee who has the requisite knowledge, training, and experience to perform specific duties.

Directional falling - a mechanical means to control the direction of falling timber.

Dog line - type of line used to fasten logs or timber products together by the use of dogs.

Domino felling - the partial cutting of multiple trees which are left standing and then pushed over with a pusher tree.

Donkey - any machine with a series of drums used to yard logs.

Double ended logs - two logs end to end on the same lay.

Drop zone - the area where the helicopter delivers logs from the logging site.

Droplines - a short line attached to the carriage or carriage block which is used as an extension to the main line.

Drum - a mechanical device on which line is spooled or unspooled.

Dry land storage - decks of logs stored for future removal or use.

Dutchman -

- A block used to change direction of line lead (side-blocking).

- A method used to pull a tree against its lean by leaving a section of the undercut on one corner of the face. The portion left consists of a single saw kerf in one side of the face, with the face completely removed on the opposite side of the face cut. A single saw kerf must never extend completely across the stump.

Experienced person - a person who has been trained and has participated in the subject process for a period of time long enough to thoroughly acquaint the person with all facets of the process.

F.O.P.S. - falling object protective structure.

Fair lead - sheaves, rolls, or a combination thereof arranged to receive a line coming from any direction for proper line spooling on to a drum.

Fell (fall) - to cut down trees.

Feller (faller) - an employee who fells trees.

Front end loader - a mobile machine mounted on a wheeled or tracked chassis, equipped with a grapple, tusk, bucket, or fork-lift device, and employed in the loading, unloading, stacking, or sorting of logs or materials.

Grounded - the placement of a component of a machine on the ground or on a device where it is firmly supported. Grounded may also relate to the placement of a tree on the ground or a method to dissipate static or electrical charges.

Guarded - covered, shielded, fenced, enclosed, or otherwise protected by means of suitable enclosures, covers, casings, shields, troughs, railings, screens, mats, or platforms, or by location, to prevent injury.

Guard rail - a railing to restrain a person.

Guyline - a line used to support or stabilize a spar, tail/lift tree, intermediate support tree or equipment. A guyline is considered a standing line.

Gypsy drum - a mechanical device wherein the line is not attached to the drum and is manually spooled to control the line movement on and off the drum.

Haulback - a line used to pull the buttrigging and main-line to the logs to be yarded.

Haulback block - any block the haulback line passes through including the corner block and tailblock.

Hay rack -

- A type of loading boom where two tongs are used and logs are suspended.

- A transporting vehicle with multiple sets of bunks attached to a rigid frame usually used for hauling logs.

Haywire - see strawline.

Hazardous falling area - the area within a circle centered on the tree being felled and having a radius not less than twice the height of that tree.

Head tree - the tree where yarding and/or loading takes place. (See spar)

Heel boom - a type of loading boom where one tong is used and one end of the log is pulled up against the boom.

High lead - a system of logging wherein the main line is threaded through the main line block, which is attached near the top of the spar, to obtain a lift of the logs being yarded.

High visibility colors - white, bright, or fluorescent colors that stand out from the surrounding background color so they are easily seen.

Hobo log and/or hitchhiker - a free or unattached log that is picked up by a turn and is transported with the turn.

Hooktender - the worker that supervises the method of moving the logs from the woods to the landing.

Hot deck - a landing where logs are being moved.

Hydraulic jack - a mechanical device, powered by internal pressure, used to control the direction in which a tree is to be felled.

In the clear - a position within the work area where the probability of hazardous contact with falling trees, moving logs, rootwads, chunks, material, rigging and equipment is minimized by distance from the hazards and/or use of physical barriers, such as stumps, trees, terrain or other objects providing protection.

Examples:

- Back behind on the uphill side of the turn and out of reach of any upending logs.

- Out of the bight.

- In the logged off area.

- In a position where movement will not be obstructed.

Intermediate support system - a system for supporting a loaded skyline in a support jack by one of the two following methods:

- Double tree support - the skyline is suspended on a single piece of wire rope supported by two trees so that the load is shared between the two trees.

- Single tree support - the skyline is suspended on a single piece of wire rope, single-eyed choker or double-eyed strap supported by a single tree. The support tree may be vertical or leaning.

Jackstrawed - trees or logs piled in an unorderly manner.

Jagers - any projecting broken wire in a strand of cable.

Kerf - the part of timber products taken out by the saw teeth.

Knob - a metal ferrule attached to the end of a line.

Landing - any place where logs are laid after being yarded, awaiting subsequent handling, loading, and hauling.

Landing chute - the head of the skid trail or road where the logs are temporarily placed before handling, loading and hauling.

Lay -

- The straight-line distance it takes a strand of wire rope to make one complete spiral around the core of a rope.

• The position of a log in a pile, on a load, or in the fell and bucked.

Limbing - to cut branches off felled or standing trees.

Loading boom - any structure projecting from a pivot point to guide a log when lifted.

Lodged tree (hung tree) - a tree leaning against another tree or object which prevents it from falling to the ground.

Log - a tree segment suitable for subsequent processing into lumber, pulpwood, or other wood products, including, but not limited to, poles, piling, peeler blocks, sections and/or bolts.

Log bronco - a sturdily built boat usually from twelve to twenty feet in length, used to push logs or bundles of logs in a generally forward direction in booming and rafting operations.

Log dump - a place where logs are removed from transporting equipment. It may be either dry land or water, par-buckled over a brow log or removed by machine.

Log stacker - a mobile machine mounted on a wheeled or tracked chassis, equipped with a frontally mounted grapple, tusk, or forklift device, and employed in the loading, unloading, stacking, or sorting of logs.

Logging machine - a machine used or intended for use to yard, move, or handle logs, trees, chunks, trailers, and related materials or equipment.

Note: A self-loading log truck is only considered a logging machine when in use for loading and unloading.

Note: A helicopter is not considered a logging machine.

Logging operations - operations associated with felling and/or moving trees, logs, veneer bolts, poles, pilings, and other forest products from the stump to the point of delivery. Such operations are such, but not limited to, marking, felling, bucking, limbing, debarking, chipping, yarding, loading, unloading, storing, and the transporting of machines, equipment and personnel from one site to another.

Long sticks - an overlength log or tree length that creates a hazard by exceeding the safe perimeters of the landing.

Machine - a piece of stationary or mobile equipment having a self-contained power plant, that is operated off-road and used for the movement of material. Machines include but are not limited to tractors, skidders, front-end loaders, scrapers, graders, bulldozers, rough terrain logging shovels, log stackers and mechanical felling devices, such as tree shears and feller-bunchers.

Mainline - the line attached to the buttrigging used to pull logs to the landing.

Mainline block - the block hung in the portable spar or tower through which the mainline passes.

Mainline train - any train that is made up for travel between the woods and log dump.

Matchcutting - the felling of trees without using an undercut.

Mechanized falling - falling of standing timber by a self-propelled mobile wheeled or tracked machine equipped with a shear or other powered cutting device.

Mechanized feller - any such machine as described in WAC 296-54-541 and 296-54-543, and includes feller/bunchers and similar machines performing multiple functions.

Mechanized logging machine - a feller-buncher, single-grip harvester, processor, forwarder, clambunk, or log loader.

Mobile log loader - a self-propelled log loading machine mounted on wheels or tracks, incorporating a boom and employed in the loading or unloading of logs by means of grapples or tongs.

Mobile yarder - a logging machine mounted on wheels, tracks, or skids, incorporating a vertical or inclined spar, tower, or boom, employed in skyline, slackline, high lead or grapple overhead cable logging systems.

Molle - a single strand of wire rope rolled into a circle with six wraps. A molle can be used as a temporary method of connecting the eye splices of two lines. A molle is used in most pin shackles in place of a cotter key.

Must - the same as "shall" and is mandatory.

New job site - a location of operations when the loading station and/or the yarder or cutting operations are moved to a new area outside of the current sale or contracted unit.

Pass line - a small line threaded through a block at the top of the spar to assist the high climber.

Permissible (as applied to any device, equipment or appliance) - such device, equipment, or appliance has the formal approval of the United States Bureau of Mines, American Standards Association, or National Board of Fire Underwriters.

Portable spar or tower - a movable engineered structure designed to be used in a manner similar to which a wood spar tree would be used.

Qualified person - a person, who by possession of a recognized degree, certificate, professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project.

Rated capacity - the maximum load a system, vehicle, machine or piece of equipment was designed by the manufacturer to handle.

Reach - a steel tube or wood timber or pole connected to the truck and inserted through a tunnel on the trailer. It steers the trailer when loaded and pulls the trailer when empty.

Reload - an area where logs are dumped and reloaded or transferred as a unit to another mode of transportation.

Rollway - any place where logs are dumped and they roll or slide to their resting place.

Root wad - the ball of a tree root and dirt that is pulled from the ground when a tree is uprooted.

R.O.P.S. - roll over protection structure.

Rub tree - a tree used to guide a turn around an area.

Running line/running rope - any moving line directly involved with the yarding of logs.

Safety factor - the ratio of breaking strength to a safe working strength or loading.

Safety glass - a type of glass that will not shatter when broken.

Sail block - a block hung inverted on the sail guy to hold the tong block in proper position.

Scaler - the person who measures the diameter and length of the logs, determines specie and grade, and makes deductions for footage calculations.

Serviceable condition - a state or ability of a tool, machine, vehicle or other device to operate as it was intended by the manufacturer to operate.

Shall - a requirement that is mandatory.

Shear log - a log placed in a strategic location to divert passage of objects.

Shore skids - any group of timbers spaced a short distance apart on which logs are rolled.

Should - means recommended.

Signal person - the person designated to give signals to the machine operator.

Siwash - to change the lead of a line with a physical object such as a stump or tree instead of a block.

Skidder - a machine or animal used to move logs or trees to a landing.

Skidding - movement of logs or trees on the surface of the ground to the place where they are to be loaded.

Skidding line - the main haulage line from a carriage to which chokers are attached. Sometimes referred to a mainline.

Skyline - the line suspended between two points on which a block or carriage travels.

Slackline - a form of skyline where the skyline cable is spooled on a donkey drum and can be raised or lowered.

Slack puller - any weight or mechanical device used to increase the movement of a line when its own weight is inadequate.

Slope (grade) - the increase or decrease in altitude over a horizontal distance expressed as a percentage. For example, change of altitude of 20 feet (6 m) over a horizontal distance of 100 feet (30 m) is expressed as a 20 percent slope.

Snag - a dead standing tree or a portion thereof. (See Danger tree)

Snorkel - a loading boom modified to extend its limitations for yarding.

Spar/spar tree - a tree or device (rigged for highlead, skyline or slackline yarding) used to yard logs by any method of logging.

Speeder - a small self-powered vehicle that runs on a railroad track.

Spike - a long heavy nail similar to a railroad spike.

Springboard - a board with an iron tip used by fallers to stand on while working above ground level.

Spring pole - a tree, segment of a tree, limb, or sapling which is under stress or tension due to the pressure or weight of another object.

Square lead - the angle of 90 degrees.

Squirrel - a weight used to swing a boom when the power unit does not have enough drums to do it mechanically.

Squirrel tree - a topped tree, guyed if necessary, near the spar tree in which the counter balance (squirrel) of a tree rigged boom is hung.

Standing line -

- Guyline

- A nonoperating rope with end terminations to support a boom or mast.

Stiff boom - two or more boom sticks wrapped together on which boom persons walk or work.

Strap - any short piece of line with an eye or "D" in each end.

Strap socket or D - a socket with a closed loop arranged to be attached to the end of a line by the molten zinc, or an equivalent method. It is used in place of a spliced eye.

Strawline - a light cable used in rigging up, or in moving other cables or blocks. The smallest line on the yarder. (Mainline - haulback line - strawline.)

Strip - a definite location of timber on which one or more cutting crews work.

Swamping - the falling or cutting of brush around or along a specified place.

Swede connection - a line configuration made by wrapping two choker lines in the same direction around a tree or log connecting the line knobs to opposite line bells.

Swifter - a piece of equipment used to tie the side sticks of a log raft together to keep the raft from spreading.

Swing cut - an intentional dutchman left on one corner of an undercut or a backcut in which the holding wood on one side is cut through in conjunction with an intentional dutchman to achieve a desired lay for the tree being fell.

Tail block - a block used to guide the haulback line at the back corner of the yarding area.

Tail hold - an anchor used for making fast any line or block.

Tail/lift tree - the tree at the opposite end from the head tree on which the skyline or other type rigging is hung.

Tie back - to use a twister(s) (or similar system/device) that has a breaking strength equal to fifty percent of the breaking strength of the mainline or skyline whichever is greater. To secure or support one anchor by securing it to a second anchor(s) such as wrapping one stump and choking another.

Tie down - a chain, cable, steel strips or fiber webbing and binders attached to a truck, trailer or other conveyance as a means to secure loads and to prevent them from shifting or moving when they are being transported.

Tight line - when either the mainline or haulback are held and power is exerted on the other or when power is exerted on both at the same time.

Tong line block - the block hung in a boom through which the tong line operates.

Tongue - a device used to pull and/or steer a trailer.

Topping - cutting off the top section of a standing tree.

Tower - (see portable spar or tower).

Tractor - a machine of wheel or track design used in logging.

Tractor logging - the use of any wheeled or tracked vehicle in the skidding or yarding of logs.

Transfer (as used in loading) - changing of logs in a unit from one mode of transportation to another.

Tree jack - a grooved saddle of wood or metal rollers contained within two steel plates, attached to a tree with a strap, used as a guide for skyline, sail guy, or similar static line. It is also formed to prevent a sharp bend in the line.

Tree plates - steel bars sometimes shaped as elongated J's, which are fastened near the top of a tree to hold guylines and prevent them from cutting into the tree when tightened. The hooks of the J are also used to prevent the mainline block strap from sliding down the tree.

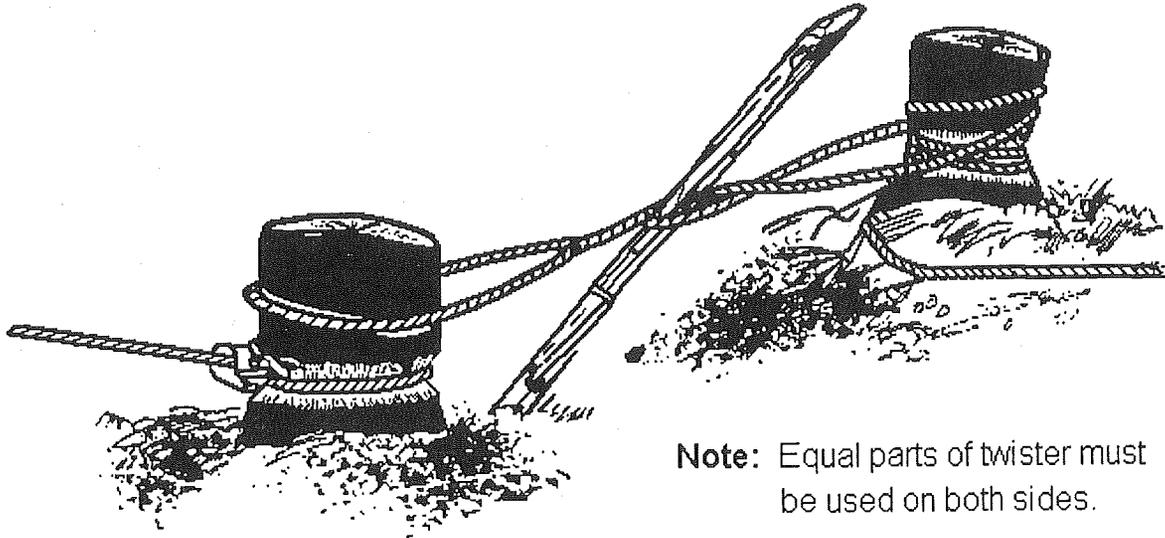
Tree pulling - a method of falling trees in which the tree is pulled down with a line.

Tug - a boat, usually over twenty feet in length, used primarily to pull barges, booms of logs, bags of debris, or log rafts.

Turn - any log or group of logs attached by some means to power and moved from a point of rest to a landing.

Twister - a line (usually small diameter wire rope "hay-wire") that supports a tailhold stump, guyline stump, or tree

that does not appear to be strong enough. This is done by connecting the tailhold to another stump or tree opposite by wrapping the tailhold to another stump or tree opposite by wrapping the two with a line. This line is then tightened by placing a piece of large-diameter limb between the wrappings and twisting them together.



Note: Equal parts of twister must be used on both sides.

TWISTER ROPE

Undercut - a notch cut in a tree to guide the direction of the tree fall and to prevent splitting or kickback.

V-lead - a horizontal angle of less than ninety degrees formed by the projected lines of the mainline from the drum of the logging machine through the block or fairlead and the yarding log or turn.

Vehicle/crew bus - a car, bus, truck, trailer or semi-trailer owned, leased, or rented by the employer that is used for transportation of employees or movement of material.

WAC - Washington Administrative Code.

Waistline - that portion of the haulback running between the corner block and the tail block.

Winching - the winding of cable or rope onto a spool or drum.

Within the stakes - when one-half the log diameter is below the stake top.

Work areas - any area frequented by employees in the performance of assigned or related duties.

Wrapper - a cable assembly or chain used to contain a load of logs.

Wrapper rack - barrier used to protect a person while removing binders and wrappers from a loaded logging truck.

Yarder (donkey) - a machine with a series of drums used to yard logs.

Yarding - the movement of logs from the place they are felled to a landing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-505, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-505,

filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-54-505, filed 11/30/87. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-505, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-505, filed 9/21/79.]

WAC 296-54-507 Employer's responsibilities. The employer must comply with the requirements of all safety and health regulations and must:

- (1) Provide safety training for new employees.
- (2) Take additional precautions to ensure safe logging operations when extreme weather or other extreme conditions create hazards. If the logging operation cannot be made safe, the work must be discontinued until safe to resume.
- (3) Ensure that danger trees within reach of landings, rigging, buildings, or work areas are either felled before regular logging operations begin, or arrange work so that employees are not exposed to the related hazards.
- (4) Develop and maintain a hazard communication program as required by chapter 296-62 WAC, Part C. The program must provide information to all employees about hazardous chemicals or substances to which they are exposed, or may become exposed, in the course of their employment.
- (5) Ensure that intoxicating beverages and narcotics are prohibited on or near the worksite. The employer must remove from the worksite any employee under the influence of alcohol or narcotics.

Note: Narcotics do not include prescription drugs taken under a doctor's direction if the use does not endanger any employee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-507, filed 8/18/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-54-507, filed 8/3/94, effective 9/12/94; 89-11-035 (Order 89-03), § 296-54-507, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-507, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-507, filed 9/21/79.]

WAC 296-54-509 Employee's responsibility. (1) Employees must coordinate and cooperate with the employer and other employees in an attempt to eliminate accidents.

(2) Employees must be aware of and follow all safe practices that apply to their work.

(3) Employees should offer safety suggestions that may contribute to a safer work environment.

(4) Intoxicating beverages and narcotics must not be permitted or used by employees in or around the worksites. Employees under the influence of alcohol or narcotics must not be permitted on the worksite.

EXCEPTION: This rule does not apply to employees taking prescription drugs and/or narcotics as directed by a physician if the use does not endanger the employee or others.

(5) Employees must conduct themselves in a workman-like manner while on the worksite.

(6) Employees must make prompt report to their immediate supervisor of each industrial injury or occupational illness, regardless of the degree of severity.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-509, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-509, filed 9/21/79.]

WAC 296-54-511 Personal protective equipment (PPE). (1) Protective equipment, including personal protective equipment for eyes, face, head, hearing and extremities, protective clothing, respiratory devices and protective shields and barriers, must be used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(2) Personal protective equipment, including any personal protective equipment provided by an employee, must be maintained in a serviceable condition.

(3) Design. All personal protective equipment must be of safe design and construction for the work to be performed. All safety belts and attachments must meet the requirements of section 3 of ANSI A10.14-1975.

(4) Personal protective equipment, including any personal protective equipment provided by an employee, must be inspected before initial use during each workshift. Defects or damage must be repaired or the unserviceable personal protective equipment must be replaced before work is commenced.

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[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-511, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-511, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-54-511, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-54-511, filed 11/30/83. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-511, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-511, filed 9/21/79.]

WAC 296-54-51110 Head protection. The employer must provide, at no cost to the employee, and ensure that all employees involved in the logging operation or any of its related activities wear head protection, unless the employees are protected by FOPS, cabs, or canopies meeting the requirements of this chapter.

(1) Hard hats purchased after February 20, 1995, must meet the requirements of ANSI Z89.1-1986, "American National Standard for Personnel Protection—Protective Headwear for Industrial Workers—Requirements," or the employer must demonstrate that they are equally effective.

(2) Hard hats purchased before February 20, 1995, must meet the requirements of ANSI Z89.1-1969, "American National Standard Safety Requirements for Industrial Head Protection," or the employer must demonstrate that they are equally effective.

(3) Hard hats must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51110, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51120 Eye and face protection. The employer must provide, at no cost to the employee, and ensure that each employee wears:

(1) Eye protection meeting the requirements of chapter 296-24 WAC, Part A-2, where there is potential for eye injury from falling or flying objects; and

(2) Face protection meeting the requirements of chapter 296-24 WAC, Part A-2, where there is potential for facial injury such as, but not limited to, operating a chipper. An employee using a chain saw may use either eye or face protection.

Note: The employee does not have to wear separate eye protection when the face protection also covers the eyes.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51120, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51130 Hearing protection. The employer must provide hearing protection when required by the general occupational health standards, chapter 296-62 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51130, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51140 Hand protection. (1) Each employee handling wire rope or other rough materials must wear hand protection that provides adequate protection from puncture wounds, cuts, and lacerations.

(2) Hand protection must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51140, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51150 Respiratory protection. The employer must provide respiratory protection when required by the general occupational health standards, chapter 296-62 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51150, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51160 Leg protection. (1) The employer must provide, at no cost to the employee, and ensure that each employee who operates a chain saw wears leg protection constructed with cut-resistant material, such as ballistic nylon. The leg protection must cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw.

EXCEPTION: This requirement does not apply to an employee working aloft in trees when supported by climbing spurs and climbing belt, or when an employee is working from a vehicle-mounted elevating and rotating work platform meeting the requirements of chapter 296-24 WAC, Part J-2, Vehicle-mounted elevating and rotating work platforms.

(2) Leg protection must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51160, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51170 Foot protection. (1) Each employee must wear foot protection that covers and supports the ankle, such as heavy-duty logging boots.

(2) Each employee who operates a chain saw must wear cut resistant foot protection that will protect the employee against contact with a running chain saw.

For example:

Leather logging boots, insulated rubber pacs, and rubber boots with cut protection will meet the cut-resistant requirement of this section.

(3) All employees whose duties require them to walk on logs or boomsticks must wear sharp-calked boots, or the equivalent.

EXCEPTION 1: When calks are ineffective because of ice, snow, or other conditions and other footwear does not provide suitable protection, employees must be prohibited from working on logs or boomsticks.

EXCEPTION 2: The employer may allow employees to wear nonslip boots instead of calks when the nonslip boots provide greater employee protection than calks (such as at scaling stations, log sorting yards, etc.). The nonslip boots must still provide firm ankle support and secure footing.

(4) Foot protection must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51170, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51180 Personal flotation devices. (1) Employees working on, over, or along water, where there is a danger of drowning, must be provided with and wear approved personal flotation devices.

(2) Employees are not considered exposed to the danger of drowning when:

(a) The water depth is known to be less than chest deep on the exposed individual;

(b) Employees work behind standard height and strength guardrails;

(c) Employees work inside operating cabs or stations that will prevent accidentally falling into the water; or

(d) Employees wear approved safety belts with lifeline attached to prevent falling into the water.

(3) Before and after each use, personal flotation devices must be inspected for defects that would reduce their designed effectiveness. Using a defective personal flotation device is prohibited.

(4) An approved personal flotation device must be approved by the United States Coast Guard as a Type I PFD, Type II PFD, Type III PFD, or Type V PFD, or their equivalent, as required in 46 CFR 160 (Coast Guard Lifesaving Equipment Specifications) and 33 CFR 175.23 (Coast Guard table of devices equivalent to personal flotation devices). Ski belt or inflatable personal flotation devices are prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51180, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51190 Highly visible clothing. (1) Employees working on landings or in log sorting yards on or from the ground, must wear highly visible hard hats, yellow or orange vests, or other similarly colored garments, to make employees more visible to equipment operators.

Note: The department recommends that hard hats and vests or outer garments be luminous or reflective.

(2) An employee working as a flagger must wear a hard hat and vest or other garment of high visibility colors. Warning vests and hard hats worn at night must be reflective.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51190, filed 8/18/99, effective 12/1/99.]

WAC 296-54-513 Arrangement of work areas and emergency contact. (1) Employee work areas must be spaced and employee duties organized so the actions of one employee do not create a hazard for any other employee.

(2) Work areas must be assigned so that:

(a) Trees cannot fall into an adjacent occupied work area;

(b) The distance between work areas is at least two tree lengths of the trees being fell;

(c) The distance between work areas reflects the degree of slope, the density of the growth, the height of the trees, the soil structure and other hazards reasonably anticipated at the worksite; and

(d) A distance of more than two tree lengths is maintained between work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.

(3) Each employee must be within visual, audible, or radio/telephone contact with another person who can assist in case of emergency.

(4) In any logging operation where cutting, yarding, or loading are performed, there must be at least two employees working as a team.

(5) Each employee must have visual or audible signal contact with another employee as often as this schedule requires:

- (a) Cutters - 30 minutes.
- (b) All other employees - 2 hours, which allows for making layouts, notching guyline stumps, etc., during normal work hours.

Exception: The requirements for a two-person team and check-in schedule do not apply to operators of motor vehicles, mechanized logging machines, watchpersons or certain other jobs which, by their nature, are singular employee assignments. However, a procedure for checking the welfare of these employees during their working hours must be instituted and all employees so advised.

(6) Mechanics or other employees must not be assigned to work on equipment by themselves when there is a probability of a fall from elevated work locations or equipment. Also, if the work is of such nature that heavy parts require moving, or there is a probability that anything heavy could fall on the person, there must be another person in the immediate area to render assistance.

(7) The employer must establish a method of checking the employees in from the woods at the end of each shift, including operators of all movable equipment. Each immediate supervisor must account for their crew.

(8) Each worksite must have at least one serviceable and operable two-way radio, phone, or radio/phone combination available to reach emergency service. Citizen band radios are permitted only as a secondary means of communication.

(9) Each worksite must have an emergency medical plan to ensure rapid emergency medical care for employees with major illnesses and injuries. The plan must be in writing and include the following:

- (a) Township, range, and section numbers or latitude and longitude or UMS Grid System coordinates;
- (b) Directions by road, or escort provisions to the site;
- (c) Telephone number of emergency medical services; and
- (d) Provisions for emergency vehicle(s) access, when working behind locked gate(s).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-513, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-513, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-513, filed 9/21/79.]

WAC 296-54-515 Accident prevention program. (1)

The employer must develop a formal accident prevention program, tailored to the needs of the particular logging operation and to the type of hazards involved.

- (2) The accident prevention program must be in writing.
- (3) The accident prevention program must cover at least the following elements:

A safety training program that describes the employer's total safety program.

- (a) How and when to report injuries;
- (b) The location of first aid supplies;
- (c) How to report unsafe conditions and practices;
- (d) The use and care of required personal protective equipment;

(e) An on-the-job review of the practices necessary to perform job assignments safely; and

(f) Recognition of safety and health hazards associated with the employee's specific work tasks, including using measures and work practices to prevent or control those hazards.

(4) The employer must document and maintain current records of required training, including:

- Who was trained;
- The date(s) of the training; and
- The signature of the trainer or the employer.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-515, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-515, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-515, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-515, filed 9/21/79.]

WAC 296-54-51510 Safety and health meetings. (1)

The employer must hold safety and health meetings at the following intervals:

- (a) Each time the employer moves to a new jobsite; and
- (b) Monthly after the initial jobsite meeting.

(2) Safety and health meetings may be conducted individually, in crew meetings, in larger groups, or as part of other staff meetings.

(3) Attendance and subject(s) must be documented.

Note: When moving to a new jobsite, site specific hazards should be identified and discussed during the prejob safety meeting.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51510, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51520 First-aid training. (1)

Each employee, including supervisors, must receive or have received first-aid and CPR training. New employees not holding a valid first-aid card must be trained within a reasonable time, not to exceed six months from hiring.

EXCEPTION: Log truck drivers are not required to receive first-aid and CPR training if they are not involved with falling, yarding, loading, or processing logs.

(2) Each employee's first-aid and CPR training and/or certificate of training must be current.

(3) At least two persons holding a valid certificate of first aid training must be present or available at all times in sorting yard operations.

(4) First-aid and CPR training must cover at least the following:

- (a) The definition of first aid.
- (b) Legal issues of applying first aid (Good Samaritan Laws).
- (c) Basic anatomy.
- (d) Patient assessment and first aid for the following:
 - Respiratory arrest.
 - Cardiac arrest.
 - Hemorrhage.
 - Lacerations/abrasions.
 - Amputations.
 - Musculoskeletal injuries.

- Shock.
- Eye injuries.
- Burns.
- Loss of consciousness.
- Extreme temperature exposure (hypothermia/hyperthermia).
- Paralysis.
- Poisoning.
- Artificial ventilation.
- (e) CPR.
- (f) Applying dressings and slings.
- (g) Treating strains, sprains, and fractures.
- (h) Immobilizing injured persons.
- (i) Handling and transporting injured persons.
- (j) Treating bites, stings, or contact with poisonous plants or animals.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51520, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51530 First-aid kits. (1) The employer must provide first-aid kits:

- (a) At each worksite where trees are being cut (e.g., falling, bucking, limbing);
- (b) At each active landing/logging site; and
- (c) In the absence of readily accessible first-aid supplies such as first-aid kits, first-aid stations, first-aid rooms or their equivalent, all transport vehicles, log trucks, speeders, road graders and similar equipment must be equipped with not less than a ten package first-aid kit; and
- (d) The number of first-aid kits and the content of each kit must reflect the degree of isolation, the number of employees, and the hazards reasonably anticipated at the worksite.

(2) Following is the minimally acceptable number and type of required first-aid supplies to meet the requirements of subsection (1)(a) and (b) of this section.

Note: The contents of the first-aid kit listed should be adequate for small worksites of two or three employees. For larger or multiple logging operations conducted at the same location, the employer should provide additional first-aid kits or additional quantities of supplies in the first-aid kits.

- (a) Gauze pads (at least 4 x 4 inches).
- (b) Two large gauze pads (at least 8 x 10 inches).
- (c) Box adhesive bandages (band-aids).
- (d) One package gauze roller bandage at least 2 inches wide.
- (e) Two triangular bandages.
- (f) Wound cleaning agent such as sealed moistened towlettes.
- (g) Scissors.
- (h) At least one blanket.
- (i) Tweezers.
- (j) Adhesive tape.
- (k) Latex gloves.
- (l) Resuscitation equipment such as resuscitation bag, airway, or pocket mask.
- (m) Two elastic wraps.
- (n) Splint.
- (o) Stretcher.

(3) Transport vehicles, log trucks, speeders and road graders must have at least the following number and type of first-aid supplies:

- 10 package kit.
- 1 pkg. adhesive bandages, 1" (16 per pkg.).
- 1 pkg. bandage compress, 4" (1 per pkg.).
- 1 pkg. scissors and tweezers (1 each per pkg.).
- 1 pkg. triangular bandage, 40" (1 per pkg.).
- 1 pkg. antiseptic soap or pads (3 per pkg.).
- 5 pkgs. employer's choice.

(4) When six or more employees are generally being transported on any one trip, the first-aid kit must be increased in size following the requirements of subsection (2) of this section. Subsection (2)(h), (n) and (o) are optional.

(5) The employer must maintain the contents of each first-aid kit in a serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51530, filed 8/18/99, effective 12/1/99.]

WAC 296-54-517 Lockout/tagout procedures. (1) The employer must establish and implement written procedures for lockout/tagout to prevent the accidental start up or release of stored energy of logging machinery that is shut down for repairs, maintenance, or adjustments.

(2) Lockout/tagout procedures must contain specific steps for:

- (a) Shutting down, blocking, and securing machines to control hazardous energy;
- (b) Locking and/or tagging out machinery; and
- (c) Release from lockout/tagout.

(3) Lockout/tagout procedure details must include at least the following:

(a) Employees performing maintenance, repairs, or adjustments have knowledge of the hazardous energy to be controlled and the means to control the energy.

- (b) Logging machine shutdown.
 - Apply brakes, swing locks, etc.
 - Place the transmission in the manufacturer's specified park position.

• Lower to the ground or secure each moving element such as, but not limited to, blades, booms, grapples, buckets, saws, and shears to prevent a release of stored energy.

• Shut down machinery and ensure that a responsible person removes and maintains possession of the ignition/master key.

- Engage hydraulic safety locks when applicable.
- Before working on hydraulic or air systems, relieve pressure by bleeding tanks or lines and operate controls to dissipate residual stored energy (pressure).
- Place lockout and/or tagout device.

(4) Release from lockout/tagout. Before lockout or tagout devices are removed and machinery is started, the work area must be inspected to ensure that all tools have been removed, guards are replaced, and employees are in the clear.

(5) The employer must provide padlocks and/or tags for locking and/or tagging out logging machinery that are durable enough to withstand the environment.

(6) Tags must have a legend such as "do not start" or "do not operate." Tags must be placed so they are obvious to anyone attempting to operate the machinery.

Note: In lockout, padlocks are commonly used to prevent access to ignition/master switches or battery disconnects.

(7) Energy sources. Stored or residual energy such as that in elevated machine members, rotating saws, hydraulic systems, air pressure and springs, must be dissipated or restrained by methods such as grounding, repositioning, blocking, chaining, bleeding down, etc.

(8) The employer must provide training to ensure that the purpose and function of the lockout/tagout program are understood by employees performing maintenance, repairs, or adjustments covered by this section. This program must be reviewed at least annually and training provided as needed. This training may be accomplished through safety meetings.

Note: See appendix 2 for a sample lockout/tagout program (energy control program).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-517, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-517, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-517, filed 9/21/79.]

WAC 296-54-519 Miscellaneous requirements. (1) Spikes, drift bolts, nails, or other metal must not be left in any recoverable log.

(2) The employer must provide and maintain portable fire extinguishers on each machine and vehicle.

(3) Machines, vehicles, and portable powered tools (unless diesel powered) must not be fueled while the motors are running.

Note: See WAC 296-54-58130(3) for exceptions related to helicopters.

(4) Flammable and combustible liquids must be stored, handled, transported, and used according to the requirements of chapter 296-24 WAC, Part E, and the following:

(a) Flammable and combustible liquids must not be transported in the driver compartment or in any passenger-occupied area of a machine or vehicle.

(b) Flammable or combustible liquids, including chain-saw and diesel fuel, may be used to start a fire, if the employer ensures that in the particular situation its use does not create a hazard for an employee.

(5) Smoking is prohibited in battery charging areas and within fifty feet of all refueling operations. Precautions must be taken to prevent open flames, sparks, or electric arcs in battery charging or refueling areas.

(6) When charging batteries:

(a) The vent caps must be kept in place to avoid electrolyte spray;

(b) Caps must be functioning; and

(c) The battery (or compartment) cover(s) must be open to dissipate heat.

(7) Tools and other metallic objects must be kept away from the tops of uncovered batteries.

(8) Explosives and blasting agents must be stored, handled, transported, and used according to the requirements of chapter 296-52 WAC, Possession and handling of explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-519, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-519, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040,

49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-519, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-519, filed 9/21/79.]

WAC 296-54-521 Motor vehicles. (1) The seats of each vehicle must be securely fastened.

(2) Each school bus type vehicle that will transport nine or more passengers must have a substantial barricade behind the driver. The barricade must extend from the floor to at least a level even with the top of the driver's head.

(3) Adequate provision must be made for safe entrance and exits. Each vehicle must have mounting steps and handholds wherever it is necessary to prevent an employee injury when entering or leaving the vehicle.

(4) When equipment or tools are carried inside the vehicle, the employer must provide and use racks, boxes, holsters or other means to transport tools so that a hazard is not created for any vehicle operator or passenger.

(5) No one may enter or exit any vehicle until the vehicle is completely stopped.

(6) Employees must keep all parts of the body within the vehicle.

(7) Heat and light must be available in the passenger area of the vehicle. Use of stoves in vehicles is prohibited.

(8) Vehicles designed to transport nine or more passengers must have an emergency exit that:

(a) Is at least six and one-half square feet in area, with the smallest dimension being at least 18 inches;

(b) Is placed at the back of the vehicle or near the back on the side opposite the regular entrance; and

(c) Has an unobstructed route to and from the exit.

(9) When no fuel is transported in the crew vehicle, a minimum rated 5/BC dry chemical fire extinguisher must be kept in the passenger compartment. When fuel is transported on the crew vehicle according to subsection (12) of this section, a minimum rated 10/BC dry chemical fire extinguisher must be kept in the passenger compartment. The extinguishing agent must be nontoxic and preferably noncorrosive.

(10) Exhaust systems must be designed and maintained to eliminate the exposure of passengers to toxic agents.

(11) Operating and maintenance instructions must be available in each vehicle. Each vehicle operator and maintenance employee must comply with the operating and maintenance instructions.

(12) Fuel must be transported or stored only in approved safety containers. Enclosed areas where fuels are carried or stored must be vented so that a hazardous concentration of fumes cannot accumulate. All containers or drums must be properly secured to the vehicle while being transported. Commercially built pick-up or flatbed trucks with a maximum seating capacity of six persons may be used to carry fuel in or on the bed of such vehicles, if the fuel is not carried in the crew compartment. Van-type vehicles may be used to carry fuel only when a vapor-proof bulkhead is installed between the passenger compartment and storage compartment. A maximum of forty-two gallons of gasoline may be carried or stored in the compartment and each container must have a maximum capacity seven gallons.

(13) Motor vehicles used regularly to transport employees must be covered against the weather and equipped and

operated according to applicable state of Washington motor vehicle laws.

(14) All operators of crew vehicles must be experienced drivers and have a valid operator's license for the class of vehicle being operated.

(15) Dump trucks must only be used in an emergency to transport workers and have adequate safety chains or locking devices that eliminate the possibility of the body of the truck being raised while employees are riding in the truck. "Emergency" means any unforeseen circumstances that call for immediate action when danger to life or danger from fire exists.

(16) An effective means of signaling must be provided for communication between the driver and the passengers being transported when they are in separate compartments.

(17) The passenger load limit of a crew vehicle must not exceed the seating capacity of the vehicle.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-521, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-531, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-531, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-531, filed 9/21/79.]

WAC 296-54-523 Inspection and repair of equipment and vehicles. Defective equipment.

(1) Equipment in need of repair must be reported to management as soon as possible and such equipment must not be used until repairs are completed if there is a possible hazard to safety of the operator or other employees.

(2) Each vehicle used to perform any logging operation must be inspected before initial use during each workshift. Defects or damage must be repaired or the unserviceable vehicle must be replaced before work is commenced.

(3) Each vehicle, machine and piece of equipment used to perform any logging operation must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-523, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-521, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-521, filed 9/21/79.]

WAC 296-54-525 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-54-527 Seat belts. Each machine equipped with ROPS and each vehicle (whether provided by the employee or the employer) must meet the following requirements:

(1) A seat belt must be provided for each vehicle, vehicle occupant, and all machines equipped with ROPS.

Note: An employer is not required to retrofit a machine or vehicle that was not equipped with seat belts at the time of manufacture.

(2) Each employee must use the available seat belt while the vehicle or machine is being operated.

EXCEPTION: During road construction operations ONLY, when road building machine operators are faced with a significant steep and deep cliff on the side, a seat belt is not required to be worn, if the employee's immediate supervisor approves of such action.

(3) Each employee must securely and tightly fasten the seat belt to restrain the employee within the vehicle or machine cab.

(4) Each machine seat belt must meet the requirements of the Society of Automotive Engineers Standard SAE J386, June 1985, "Operator Restraint Systems for Off-Road Work Machines." Seat belts need not be provided for equipment that is designed for stand-up operations.

(5) Seat belts must not be removed from any vehicle or machine. The employer must replace each seat belt that was removed from any vehicle or machine that was equipped with seat belts at the time of manufacture.

(6) Each seat belt must be maintained in a serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-527, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-529, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-529, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-529, filed 9/21/79.]

WAC 296-54-529 Overhead electrical lines clearance. One of the following conditions must exist in work areas where equipment or machines are operated near electrical distribution and transmission lines:

(1) The lines have been de-energized and visibly grounded at the point of work;

(2) Insulating barriers that are not a part of or an attachment to the equipment or machinery are erected to prevent physical contact with the lines; or

(3) All of the following requirements are met:

	Line Voltage	Required minimum clearance between lines and any part of equipment or machine
(a)	50 kV or below	ten feet
(b)	over 50 kV	ten feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than ten feet
For equipment or machinery in transit with no load and any boom or extended equipment lowered:		
(c)	50 kV or below	four feet
(d)	50-345 kV	ten feet
(e)	345-750 kV	sixteen feet

(4) Someone must be designated to observe proper clearance and to give timely warning for all operations where it is difficult for the operator to see well enough to maintain the clearance.

(5) All overhead wires shall be considered energized unless the line owner or the electrical utility authorities ensure that it is not an energized line and has been visibly grounded.

(6) Special precautions must be taken to prevent trees from falling into power lines. The employer must notify the

power company immediately if a felled tree makes contact with any power line. Before falling any tree that appears will hit a power line, the employer must notify the power company. If a tree does contact a power line, all employees must remain clear of the area until the power company ensures that there is no electrical hazard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-529, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-527, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-527, filed 9/21/79.]

WAC 296-54-531 Truck roads. (1) Haul road grades must not exceed 20 percent unless:

(a) Special equipment and safety measures are used to accommodate the steep grade; or

(b) The logging equipment or truck is specifically designed and approved by the manufacturer for operation on grades over twenty percent.

(2) Truck road surfaces must meet the following requirements:

(a) Truck roads are wide enough and even to ensure the safe operation of equipment.

(b) Hazards such as broken planking, deep holes, large rocks, logs, etc., that make equipment operation unsafe, must be immediately corrected.

(c) On blind curves, one of the following must be implemented:

(i) Truck roads are wide enough for two trucks to pass;

(ii) A signal system is maintained; or

(iii) Speed is limited so that the vehicle can be stopped in one-half the visible distance.

(3) For all portions of roads under the direct control of the employer, the employer must ensure that:

(a) All danger trees are fell a safe distance back from the roadway;

(b) Rocks that present a hazard are cleared from banks; and

(c) Brush and other materials that obstruct the view at intersections or on sharp curves are cleared.

(4) All bridge structures used in the logging operation must meet the following requirements:

(a) Structures are adequate to support the maximum imposed loads without exceeding the maximum safe working unit stresses;

(b) Bridges have an adequate number of reflectors to clearly define the entrance to the bridge;

(c) Structures are maintained in good condition and repair;

(d) Structures are inspected at least annually by a qualified authorized person; and

(e) A record maintained of each inspection must be available to a representative of the department on request.

(5) Shear rails must be installed on both outside edges of bridges. The shear rails must be securely fastened and made of material able to withstand the impact generated by contact with the wheels of a loaded vehicle. The top of shear rails must be at least fifteen inches above the bridge surface. Bridges in use before 1980 with outside shear rails a mini-

num of ten inches high or center shear rails at least five inches high are permissible until repairs are needed.

(6) The employer must implement measures that minimize dust to the degree that visibility is sufficient to allow an operator to safely operate a vehicle. Vehicle operators must travel at a speed consistent with road conditions.

(7) Pneumatic-tired equipment must have fenders as described in the Society of Automotive Engineers Technical Report J321a.

(8) Employee(s) must be assigned to flag on roads or provide other equivalent protection where hazardous conditions are created from logging such as but not limited to:

(a) Running wire rope lines or rigging across road grades, excluding guylines and standing skylines if lines remain a safe distance above the road to allow a vehicle to pass under; or

(b) The movement of logs, chunks, or debris across or suspended over road grades.

EXCEPTION: Where there is no through traffic, such as on a dead end road or where the property owner's permission or proper authority is granted to close a section of road, warning signs and barricades may be used instead of flagger(s).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-531, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-533, filed 9/21/79.]

WAC 296-54-533 Road pioneering and earthwork.

(1) Banks at the borrow area must be sloped to prevent slides.

(2) Backfill must be firmly compacted.

(3) Roadside banks must be sloped or stabilized to prevent slides.

(4) Overhanging banks, large rocks and debris must be removed or secured.

(5) Where riprap is used, the material and design must ensure containment of material.

(6) Trees or snags that may fall into the road must be fell.

(7) Root wads, logs, and other unstable debris must not be placed against standing timber or otherwise placed so as to create a hazard for timber falling or other logging operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-533, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-535, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-535, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-535, filed 9/21/79.]

WAC 296-54-535 Hand and portable powered tools.

(1) Each hand and portable powered tool, including any tool provided by an employee, must be maintained in serviceable condition.

(2) Each tool, including any tool provided by an employee, must be inspected before initial use during each workshift. The inspection must include at least the following:

(a) Handles and guards, to ensure that they are sound and tight-fitting, (properly shaped, free of splinters and sharp edges, and in place);

(b) Controls, to ensure proper function;

(c) Chain saw chains, to ensure proper adjustment;

(d) Chain saw mufflers, to ensure that they are operational and in place;

(e) Chain brakes and/or nose shielding devices, to ensure that they are in place and function properly;

(f) Heads of shock, impact-driven and driving tools, to ensure that there is no mushrooming.

(3) Each tool must be used and maintained according to the following requirements:

(a) Each tool is used only for purposes for which it was designed.

(b) Any shock, impact-driven or driving tool is repaired or removed from service when the head begins to chip.

(c) The cutting edge of each tool is sharpened according to manufacturer's specifications whenever it becomes dull during the workshift.

(d) Each tool is stored in the provided location when not being used at a worksite.

Note: See WAC 296-24-650 for rules on the use and maintenance of tools and other equipment not covered by this chapter.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-535, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-523, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-523, filed 9/21/79.]

WAC 296-54-537 Chain saws. (1) Operators must inspect chain saws daily to ensure that handles and guards are in place, and controls and other moving parts are functional.

(a) Each chain saw placed into initial service after February 9, 1995, must be equipped with a chain brake and, shall otherwise meet the requirements of ANSI B175.1-1991 "Safety Requirements for Gasoline-Powered Chain Saws" and the requirements of this chapter;

(b) Each chain saw placed into service before February 9, 1995, must be equipped with a protective device that minimizes chain saw kickback, i.e., reduced kick back bar, chains, bar tip guard, or chain brake; and

(c) No chain saw kick back device shall be removed or otherwise disabled.

(2) Saw pinching and subsequent chain saw kickback must be prevented by using wedges, levers, guidelines, and saw placement, or by undercutting.

(3) Chain saws must be:

(a) Shutoff while fueling;

(b) Fueled outdoors at least ten feet from anyone smoking or from other potential sources of ignition; and

(c) Started at least 10 feet (3 m) from the fueling area.

(4) Chain saws must have a positive means of stopping the engine.

(5) Unless the carburetor is being adjusted, the chain saw must be shut off before any adjustments or repairs are made to the saw, chain, or bar.

(6) Using a chain saw with a faulty clutch is prohibited.

(7) The bar must be handled only when the chain saw motor is shut off.

(8) The drive end of the chain saw bar must be guarded.

(9) The chain saw must have an automatic throttle control that will return the engine to idle speed when the throttle is released.

Note: Idle speed is when the engine is running and the chain does not rotate on the bar.

(10) The chain saw must be started on the ground, log or where otherwise firmly supported. Drop starting a chain saw is prohibited.

(11) A chain saw must be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in a specific situation.

(12) The chain saw must be carried in a manner that will prevent operator contact with the cutting chain and muffler.

(13) The chain saw must be shut off or at idle before the faller starts to retreat.

(14) The chain saw must be shut down or the chain brake engaged whenever a saw is carried:

(a) Further than 50 feet (15.2 m); or

(b) Less than 50 feet if conditions such as, but not limited to, the terrain, underbrush, and slippery surfaces, may create a hazard for an employee.

(15) Using a chain saw to cut directly over head is prohibited.

(16) The chain saw operator must be certain of footing before starting to cut. The chain saw must not be used in a position or at a distance that could cause the operator to become off-balance, to have unsteady footing, or to relinquish a firm grip on the saw.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-537, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-537, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-537, filed 9/21/79.]

WAC 296-54-539 Falling and bucking—General. (1) The employer must assign work areas so that:

(a) Trees cannot fall into an adjacent occupied work area;

(b) The distance between work areas is at least two tree lengths of the trees being fell (see Figure 1: Distance Between Work Areas);

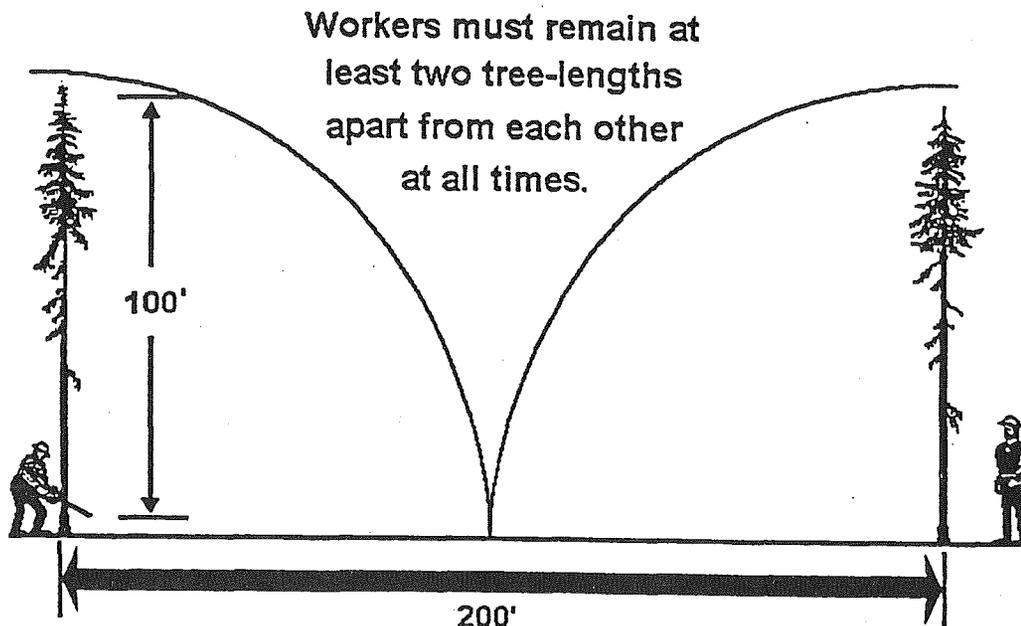


Figure 1: Distance Between Work Area

(c) The distance between work areas reflects the degree of slope, the density of the growth, the height of the trees, the soil structure and other hazards reasonably anticipated at the worksite; and

(d) A distance of more than two tree lengths is maintained between work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.

EXCEPTION: This rule does not apply to a team of cutters working on the same tree.

(2) Before falling or bucking, conditions such as, but not limited to, snow and ice accumulation, the wind, the lean of tree, dead limbs, and the location of other trees, must be evaluated by the cutter and precautions taken so a hazard is not created for an employee. Accumulations of snow and ice that may create a hazard for an employee must be removed before beginning falling in the area, or the area must be avoided.

(3) Employees must not approach a cutter closer than two tree lengths of trees being felled until the cutter has acknowledged that it is safe to do so.

(4) A competent person, properly experienced in this type of work, must be placed in charge of falling and bucking operations. Inexperienced workers must not be allowed to fall timber, buck logs or windfalls unless working under the direct supervision of an experienced cutter.

(5) Trees must not be felled if the falling tree can strike any line in the logging operation and endanger workers.

(6) Before an employee falls or bucks any tree:

(a) A sufficient work area must be swamped;

(b) The cutter must plan and clear an escape path; and

(i) The escape path must extend diagonally away from the expected felling line unless such an escape path poses a greater hazard than an alternate escape path; and

(ii) An escape path must be used as soon as the tree or snag is committed to fall, roll, or slide.

(7) If a cutter has determined a tree cannot be safely felled, the work must stop until the cutter has conferred with a supervisor or an experienced cutter and determined the safest possible work method or procedure.

(8) The person in charge of cutting crews must regularly inspect the work of the cutting crews and is responsible to ensure the work is performed in a proper and safe manner.

(9) All cutters must carry or have in near proximity at all times:

(a) An axe or suitable tool for driving wedges;

(b) A minimum of two wedges;

(c) A whistle carried on the person; and

(d) A first-aid kit.

(i) The first-aid kit must contain at least two trauma bandages or equivalent absorbent gauze material and a means to secure the material in place.

(ii) First aid supplies must be kept clean and dry.

(10) A flagperson(s) must be assigned on roads where hazardous conditions are created from falling trees. Where there is no through traffic, such as on a dead end road, warning signs or barricades may be used instead of a flagperson(s).

(11) A cutter must not fall a tree or danger tree alone when at least two cutters are necessary to minimize hazards.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-117, § 296-54-539, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-539, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-539, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-539, filed 9/21/79.]

WAC 296-54-53910 Falling and bucking—Falling.

(1) Where felled trees are likely to roll and endanger workers,

cutting must proceed from the bottom toward the top of the slope, and uphill from previously fell timber.

(2) A cutter must not be placed on a hillside immediately below another cutter or below other logging operations where there is probable danger.

(3) Cutters must be informed of the movement and location of other employees placed, passing, or approaching the vicinity of trees being fell.

(4) Cutters must give audible warning when falling trees, and:

- (a) Indicate the direction of fall;
- (b) Ensure that all employees are out of reach of the tree;

and

(c) Ensure that all employees are in clear of logs, fallen trees, snags, or other trees that may be struck by the falling tree.

EXCEPTION: Audible warnings are not required when falling trees less than 18 inches DBH, if the cutter has an unobstructed view of the entire area that could be affected by the tree being fell and is assured there is no one within the area.

(5) While manual falling is in progress, all logging machines must be operated at least two lengths away from trees being manually fell.

EXCEPTION: This provision does not apply to logging machines performing tree pulling operations or logging machines called upon by the cutter to ground hazard trees. All cutters must be notified of the logging machine's entrance into the area and all falling within two tree lengths of the logging machine must stop.

(6) Trees must be fell into the open whenever conditions permit.

(7) Cutters must not fall into another strip; trade leaners on the line.

(8) Knocking over trees larger than six inches in diameter in lieu of cutting is prohibited, except as provided in WAC 296-54-53910(9).

(9) Domino falling of trees, including danger trees, is prohibited. Domino falling does not include the falling of a single danger tree by falling another single tree into it.

(10) Undercuts large enough to safely guide trees and eliminate the possibility of splitting must be used on all trees over 6 inches DBH.

For example: A tree with no perceptible lean, having an undercut depth of one-fourth of the diameter of the tree and a face opening equal to one-fifth of the diameter of the tree would meet the requirement.

(11) A cutter must place an adequate undercut and leave enough holding wood to ensure the tree will fall in the intended direction.

(12) The two cuts that form the undercut must not cross where they meet, except where a dutchman is required on either side of the cut.

(13) The undercut must not be made while other workers are in an area into which the tree could fall.

(14) A backcut must be made in each tree being fell.

(a) The backcut must be as level as possible;

(b) The backcut must leave enough hinge wood to hold the tree to the stump during most of its fall so that the hinge is able to guide the tree's fall in the intended direction; and

(c) The backcut must be above the level of the horizontal facecut to provide an adequate platform to prevent kickback.

EXCEPTION: This requirement does not apply to open-faced falling where two angled facecuts are used instead of a horizontal facecut.

(d) In tree-pulling operations the backcut may be at or below the undercut hinge point.

(15) Cutting holding wood instead of using wedges is prohibited. Swing cuts are prohibited except by an experienced person.

(16) Trees with face cuts and/or backcuts must not be left standing unless all the following conditions are met:

- (a) The cutter clearly marks the tree;
- (b) Discontinues work in the hazardous area;
- (c) Notifies all workers who might be endangered; and
- (d) Takes appropriate measures to ensure that the tree is safely fell before other work is undertaken in the hazardous area.

(17) Undercuts and backcuts must be made at a height above the highest ground level to enable the cutter to safely begin the cut, control the tree, and have freedom of movement for a quick escape from a falling tree.

(18) Lodged trees must be clearly marked and identified by a predetermined method and all persons in the area must be instructed not to pass or work within two tree lengths of the trees except to ground them.

Note: See Figure No. 2, for illustrations of undercuts.

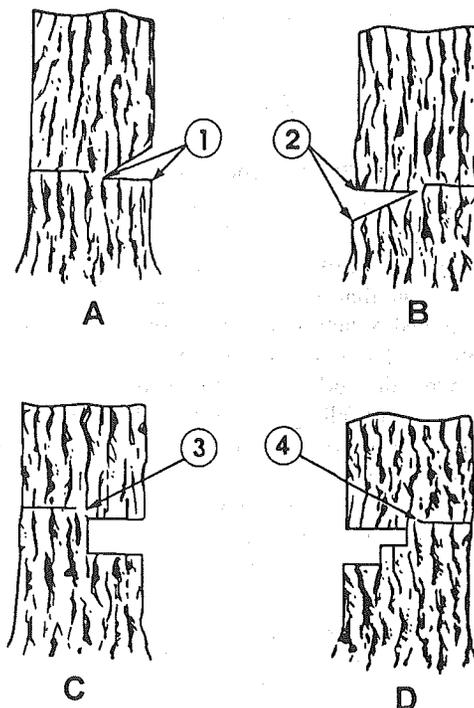


FIGURE 2: UNDERCUTS

- (A) *Conventional undercut.* Can be made with parallel saw cut and axe diagonal cut or both cuts with the saw. Generally used on trees of small diameter.
- (B) *Humboldt undercut.* Leaves square-end log. Same as (A), except that waste is put on the stump.

- (C) *Two parallel cuts with the saw. The material between the cuts is chopped out with an axe-adz (pulaski) combination. Used on trees over 30 inches in diameter.*
- (D) *Three parallel cuts with the saw, leaving a step. Same in principle as (C). Used on trees of very large diameters.*

	Item
1	Undercut depth
2	Undercut height
3	Holding wood
4	Backcut

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53910, filed 8/18/99, effective 12/1/99.]

WAC 296-54-53920 Falling and bucking—Bucking.

(1) The tree (and root wad if applicable) must be carefully examined to determine which way the logs (and root wad) will roll, drop, or swing when the cut is completed. No worker shall be allowed in this danger zone during cutting. The cut must be made from a position that will not expose the cutter to potential injury.

(2) Logs must be completely bucked through whenever possible. If it becomes hazardous to complete a cut, then the log must be marked and identified by a predetermined method. Rigging crews must be instructed to recognize such marks and when possible, cutters must warn the rigging crew of locations where unfinished cuts remain.

(3) Cutters must give timely warning to all persons within range of any log that may have a tendency to roll after being cut off.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53920, filed 8/18/99, effective 12/1/99.]

WAC 296-54-53930 Falling and bucking—Danger trees.

(1) Each danger tree must be carefully checked for signs of loose bark, broken branches and limbs, or other damage before they are fell or removed. Accessible loose bark and other damage that may create a hazard for an employee must be removed or held in place before falling or removing the tree. When a danger tree has elevated loose bark that cannot be removed, the buddy system must be used to watch for and give warning of falling bark or other hazards.

(2) Danger trees that are unsafe to cut must be blown down with explosives or fell by other safe methods.

(3) To avoid use of wedges, which might dislodge loose bark or other material, danger trees must be fell in the direction of lean unless other means (mechanical or dynamite) are used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53930, filed 8/18/99, effective 12/1/99.]

WAC 296-54-53940 Falling and bucking—Springboards and tree jacking.

(1) Springboards must be:

- Made of clear, straight grained sound stock;
- Long enough, wide enough, and strong enough; and
- Replaced when they will no longer safely support the expected load at the extreme end.

(2) Springboard irons must be well lipped and firmly attached with bolts or other equally strong attachment.

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(3) Saw chains must be stopped while shifting springboards.

(4) Jack plates must be used with hydraulic tree jacks and the base plate must be seated on solid wood inside the bark ring as close to level as possible.

(5) When necessary, two workers must be present at the tree during hydraulic tree jacking to lend assistance.

(6) Wedges must be used as a follow-up method while using tree jacks, and continuously moved in as the tree is jacked.

(7) All hydraulic tree jacks must be equipped with a check valve and the pump must be equipped with an operable pressure gauge.

(8) Jacking a tree straight uphill is prohibited when the tree may slide back past the stump.

(9) On slopes over 50% grade, tree(s) must at least be quartered to a degree that prevents employees from being exposed to the possibility of sliding or rolling trees or logs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53940, filed 8/18/99, effective 12/1/99.]

WAC 296-54-541 Tree pulling. (1) The cutter must be responsible for determining if a tree can be safely pulled. If, for any reason, the cutter believes the tree pulling cannot be completed safely, the tree must be conventionally fell.

(2) When using a radio, positive radio communications must be maintained at all times between the tree pulling machine and cutter when tree pulling. An audible signal must be blown when the initial pull is made on the tree and the line is tightened. Hand signals, instead of radio communications and an audible signal, may be used only if the cutter is clearly visible to the tree puller operator.

(3) A choker with bell, or a line and sleeve shackle must be used as the means of attachment around the tree when tree pulling. (See also WAC 296-54-54710(4).) The bight on the line must be the minimum necessary to hold the choker or line around the tree.

(4) The tree pulling machine must be equipped with a torque converter, fluid coupler, or an equivalent device to ensure a steady even pull on the line attached around the tree.

(5) The tree pulling line must have as straight and direct path from the machine to the tree as possible. Physical obstructions that prevent a steady even pull on the tree pulling line must be removed or the line must be rerouted.

(6) Siwashing, in lieu of a block, in order to change tree pulling lead, is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-541, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-541, filed 9/21/79.]

WAC 296-54-543 Mechanized falling. (1) A flagger(s) must be assigned on roads where hazardous conditions are created from falling trees. Where there is no through traffic, such as on a dead end road, warning signs or barricades may be used instead of a flagger(s).

(2) Self-propelled mobile falling equipment used for falling trees must be designed, or have auxiliary equipment installed, that will cause the tree to fall in the intended direction.

(3) Until the machine operator has acknowledged that it is safe to do so, no employee shall approach a mechanical falling operation closer than a minimum of two tree lengths of the trees being fell.

(4) Mechanized falling must be conducted in a way that does not endanger people or equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-543, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-543, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-543, filed 9/21/79.]

WAC 296-54-545 Climbing equipment and passline.

(1) Standard climbing equipment must be furnished by the employer. However, the climber may use personal equipment, if it meets the requirements of this section and is permitted by the employer.

(a) The climber may fasten climbing rope by passing it through "D" rings fastened to the belt and around his body before tying it to itself.

(b) An extra set of climbing equipment must be kept at the jobsite and another person with climbing experience must be present.

(2) The climber must be equipped with a climbing equipment assembly that includes:

(a) A safety belt with double "D" rings;

(b) Steel spurs long and sharp enough to hold in any tree in which they are used; and

(c) A climbing rope made of wire-core hemp, wire or chain construction.

(3) All climbing equipment must be maintained in good condition.

(4) Defective climbing equipment must be immediately removed from service.

(5) Going up a raised portable spar or tower without suitable equipment is prohibited.

(6) Only an employee directed by the climber may work directly under a tree. The climber must give warning before intentionally dropping any objects or when objects are accidentally dropped.

(7) Running lines must not be moved while the climber is working in the tree, except such "pulls" as climber directs and are necessary for the work.

(8) One experienced person must be assigned to transmit the climber's signals to the machine operator.

(a) This signal person must not otherwise be occupied while the climber is in the tree.

(b) The machine operator must not be distracted while the climber is using the passline.

(c) The designated signal person must be positioned clear of hazards from falling, flying, or thrown objects.

(9) The climber must be an experienced logger with proper knowledge of logging methods and the safety of rigging spar and tail trees.

(10) Noisy equipment such as power saws, tractors, and shovels must not be operated near where a climber is working when such noise will interfere with the climber's signals.

(11) Climbing and passline equipment must not be used for other purposes.

(12) Lineman hooks must not be used as spurs.

(13) Tools used by the climber, except the chain saw, must be safely secured to climber's belt when not in use.

(14) Using snaps on a climber's rope is prohibited unless a secondary safety device between the belt and snap is used.

(15) A climber's rope must encircle the tree before the climber leaves the ground, except when the climber is riding the passline.

(16) While the climber is working in the tree, persons must keep at sufficient distance from the tree to be clear of falling objects.

(17) When used, passline blocks must be kept in alignment and free from fouling.

(18) Loose equipment, rigging, or material must either be removed from the tree or securely fastened.

(19) Drums used for passlines must have enough flange depth to prevent the passline from running off the drum at any time.

(20) Passlines must:

(a) Be at least 5/16-inch and not over 1/2-inch in diameter;

(b) Not be subjected to sawing on other lines or rigging, and kept clear of all moving lines and rigging;

(c) Be one continuous length and in good condition with no splices, knots, molles, or eye-to-eye splices between the ends;

(d) Long enough to provide three wraps on the drum before the climber leaves the ground.

(21) Passline chains must be:

(a) At least 5/16-inch alloy or 3/8-inch high test chain and must not contain cold shuts or wire strands;

(b) Attached to the end of the passline with a screw-pin shackle, a slip-pin shackle with a nut and molle, or a ring large enough to prevent going through the pass block; and

(c) Fitted with links or rings to prevent workers from being pulled into the passline block.

(22) Pass blocks must:

(a) Be inspected before placing in each spar and the necessary replacements or repairs made before they are hung;

(b) Have the shells bolted under the sheaves;

(c) Have the bearing pin securely locked and nuts keyed, or the block positively secures the nut and pin;

(d) Be equipped with sheaves at least six inches in diameter; and

(e) Comply with WAC 296-54-54750.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-545, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-545, filed 9/21/79.]

WAC 296-54-547 Rigging—General. (1) Rigging must be arranged and operated so that rigging and loads will not foul or saw against lines, straps, blocks, or other equipment or material.

(2) When not in use, rigging must be stored so that it does not present a hazard to employees.

(3) Tongs, grapples, logs and materials must not be swung or suspended over employees.

(4) All employees must be in the clear of running lines, standing skylines, moving rigging, or suspended loads until the rigging or loads have completely stopped.

(5) Riding on a turn of logs or rigging is prohibited, except on the passline. Holding on to moving rigging or chokers to be pulled uphill is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-547, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-547, filed 9/21/79.]

WAC 296-54-54710 Rigging—Inspection. (1) An authorized, qualified person must thoroughly inspect all blocks, straps, guylines, butt rigging, and other rigging before they are used.

(2) The inspections must include examining for:

- (a) Damaged, cracked, or worn parts;
- (b) Loose nuts and bolts;
- (c) Need for lubrication; and
- (d) The condition of straps and guylines.

(3) All necessary repairs or replacements for safe operation must be made before the rigging is used.

(4) All rigging elements must be large and strong enough to safely withstand the stress that can be imposed by the maximum pull of the power unit against the equipment or devices as rigged or used in that particular logging operation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54710, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54720 Rigging—Molles. (1) Molles must not be used as a temporary connection between two spliced eyes of a load-supporting running line. Double molles

may be used on droplines only and single molles may be used on strawline.

(2) Molles must be as large as the pinhole will accommodate and have the loose ends rolled in.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54720, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54730 Rigging—Shackles. (1) Shackles used to hang blocks, jacks, or rigging on spars, must have the pins secured with a nut and cotter key or a nut and molle.

(2) Flush pin, straight-sided shackles must be used for mainline, slackline and skyline extensions.

(3) Shackles with screw pins, knockout or slip pins may be used to anchor skylines, slackline, guylines, and/or guylines extensions.

(4) All other shackles must be screw pin type or have the pin secured with a nut and cotter key or a nut and molle, except as specified elsewhere for specific purposes.

(5) The opening between the jaws of shackles used to hang blocks, jacks, and rigging and to join or attach lines, must be a maximum of one inch greater than the size of the rope, swivel, or shackle to which it is attached.

(6) All shackles must be one size larger than the lines they connect and made of forged steel or material of equivalent strength.

(7) Shackles used to join lines must be hung with the pin and "U" part of the shackle through the eyes of the lines.

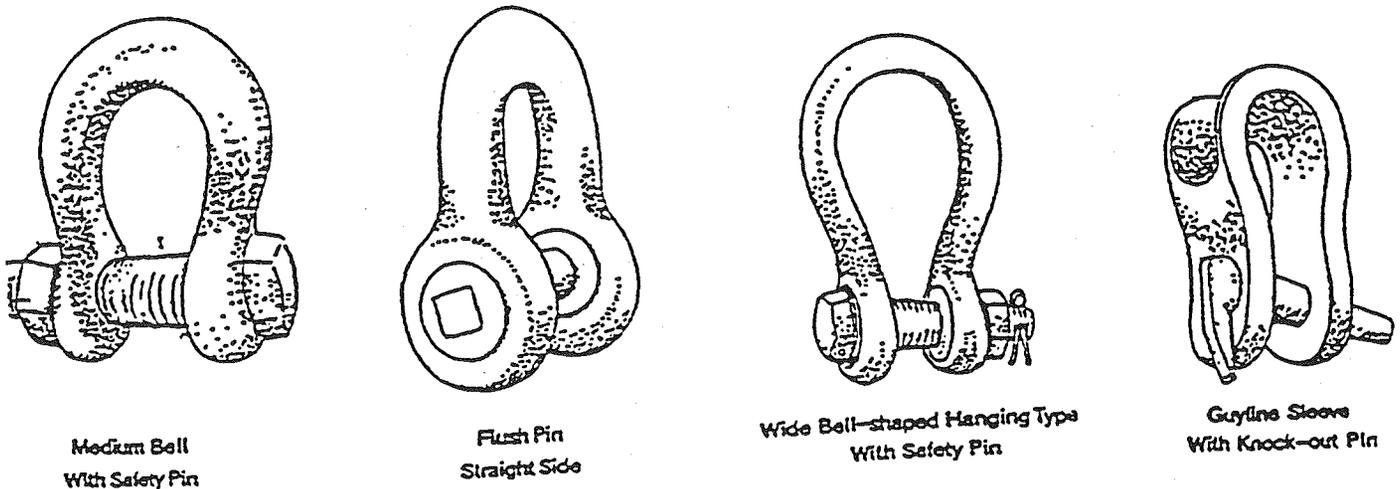


Figure 2-2: Shackles

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54730, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54740 Rigging—Straps. Straps must be used according to the following requirements:

(1) Straps or chokers used to hang corner or tail blocks and straps used to anchor skylines/slacklines must be the size required by Table 1: Strap/Choker Size in Inches.

Table 1: Strap/Choker Size in Inches		
Running Line Size in Inches	Block or Skyline / Slackline Hung in Both Eyes	Block Hung in Single Eye
5/16	1/4	1/2
3/8	3/8	9/16
7/16	7/16	5/8
1/2	1/2	3/4
9/16	9/16	7/8
5/8	5/8	1
3/4	3/4	1 1/8
7/8	7/8	1 1/4
1	1	1 3/8
1 1/8	1	
1 1/4	1	
1 3/8	1	
1 1/2	1 1/8	
1 5/8	1 1/4	
1 3/4	1 1/4	
1 7/8	1 3/8	
2	1 3/8	

Note: Both strap ends must be under equal tension.

(2) When a single choker or single part strap is used to support lift blocks, jacks and tree shoes they must be adequately sized to support the applied loads.

(3) When a two part strap or two chokers are used to hang a block, jack, tree shoe, or rigging, both eyes or ends must be under equal tension.

(4) Where two equal length chokers are used instead of one choker to gain extra breaking strength, they must be arranged in a swede connection.

(5) Straps or chokers used to hang or support blocks, jacks, tree shoes, or rigging must be replaced when there is evidence of damaged or broken wires. They must:

- (a) Be made of new wire rope; or
- (b) Meet the pull test strength of new wire rope.

(6) Threading wire rope straps eye through eye is prohibited.

(7) Synthetic straps must be used as recommended by the manufacturer and only at a flat or downward angle unless wrapped one full turn around the tree support to prevent the strap from riding up on the support.

(8) Synthetic straps must be removed from service when wear reaches the limits prescribed by the manufacturer or when deterioration is evident.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54740, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54750 Rigging—Blocks. (1) Load-bearing blocks must:

- (a) Not be used for heavier strains or lines than those for which they are constructed;
- (b) Be fitted with line guards;

- (c) Be designed and used to prevent fouling;
- (d) Be kept in proper alignment when in use;
- (e) Be equipped with bearing and yoke pins that will safely withstand the strains imposed, and are securely fastened; and
- (f) Be equipped with sheaves designed for the size of the wire rope used.

EXCEPTION: Subsections (b), and (f) do not apply to rig-up ("Tommy Moore") blocks.

(2) Blocks with cracked or excessively worn sheaves or shells must not be used.

(3) Block bearings must be kept well lubricated.

(4) All pins in blocks must be properly secured by "Molle Hogans" or keys of the largest size the pin hole will accommodate. When blocks are hung in spars, pins must be secured with a nut and cotter pin or nut and molle.

(5) Lead blocks used for yarding, swinging, loading and unloading used in wood spars shall:

- (a) Be of the type and construction designed for this purpose;
- (b) Be bolted with not less than two bolts through the shells below the sheaves in a manner that will retain the sheave and line in case of bearing pin failure (this does not apply to haulback lead blocks); and
- (c) Mainline blocks shall have a sheave diameter of not less than twenty times the diameter of the mainline.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54750, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54760 Rigging—Hanging blocks. (1) All logging systems must use enough corner or tail blocks to distribute the stress on anchors and attachments.

(2) Blocks (other than passline or haywire) must be hung by one of the following methods:

- (a) Hanging the block in both eyes or Ds of the straps (threaded straps are prohibited); or
- (b) If chokers are used, the ferrule must be properly seated in the socket of the bell or hook to prevent the ferrule from coming unbuttoned. The chokers must be the size required in WAC 296-54-54740(1); or
- (c) If single part straps are used, the straps must be secured with a shackle and be the size required in WAC 296-54-54740(1).

(3) The yoke pin of haulback blocks shall be inserted with the head facing the direction from which the rigging approaches.

(4) When there is danger of tail block straps slipping up or off the stump or tree, the stump or tree must be adequately notched or the line properly wrapped and secured. When the tail tree or stump is not secure, it must be tied back.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54760, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54770 Chokers and butt rigging. (1) Chokers must be at least one size smaller than the mainline. If a dropline is used it must have a breaking strength equal to a line one size smaller than the mainline.

(2) All butt hook rigging must be used in a manner to prevent loss of the choker.

(3) Molles or cold shuts are prohibited in butt rigging as a load bearing connection.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-54770, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-559, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-559, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-05-013 (Order 81-3), § 296-54-559, filed 2/10/81. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-559, filed 9/21/79.]

WAC 296-54-549 Selecting spar, tail and intermediate support trees. (1) Spar, tail and intermediate support trees must be examined carefully for defects before being selected. They must be sound, straight, green and of sufficient diameter to withstand the strains to be imposed.

(2) Trees having defects that impair their strength must not be used for spar, tail or intermediate support trees. Raised trees must be identified and marked as such.

(3) Douglas fir or spruce must be used as spar trees when available. If other species must be used, additional guylines, tree plates or other precautions must be taken to ensure that the tree will withstand the strains to be imposed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-549, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-549, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-549, filed 9/21/79.]

WAC 296-54-551 Raising and lowering portable spars or towers. (1) A qualified, authorized person must direct each raising and lowering of a portable spar or tower.

(2) All employees not engaged in the raising or lowering of portable spars must stay in the clear during these operations.

(3) Portable spars must be leveled to provide proper line spooling and avoid excessive stress on component parts.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-551, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-551, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-551, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-551, filed 9/21/79.]

WAC 296-54-553 Metal spars. (1) Each portable metal spar must have an identification plate permanently attached to its base or on the yarder in a position that can be easily read by a person standing on the ground or on the base platform.

EXCEPTION: A hydraulic loader with yarding drums is not required to have an identification plate if the drums are installed and used according to the manufacturer's recommendations.

(2) The identification plate must have the following information:

(a) Name and address of manufacturer;

(b) Model number; and

(c) The maximum and minimum angle at which the metal spar is designed to operate.

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(3) The identification plate on metal spars manufactured after July 1, 1980, must also have the following information:

(a) The maximum breaking strength and/or size of the mainline for which the spar is designed;

(b) The maximum breaking strength and/or size of the haulback line for which the spar is designed;

(c) The number, breaking strength, and size of guylines or any other lines required; and

(d) For a spar designed for a skyline, slackline, or modified slackline system, the maximum breaking strength and size of the skyline, mainline, and haulback line that can be used.

(4) All portable metal spars must be operated within the manufacturer's capacity:

(a) As specified on the identification plate; or

(b) As modified by the manufacturer; or

(c) As designed and specified by a registered engineer; or

(d) A tension limiting device must be installed on the yarder. The device must be:

(i) Designed to automatically slack the skyline or mainline to within the manufacturer's line strength specifications;

(ii) Tamper proof;

(iii) Inspected; and

(iv) Maintained in good operating condition; or

(e) A line fuse installed in the skyline or mainline. Line fused systems must have a design breaking strength equal to or less than the maximum line rating of the spar as listed on its identification plate.

Note: Item (d) and (e) list options to follow when using wire rope which exceeds the manufacturer's line strength specifications.

(5) Equipment used for yarding, which is specifically designed to be self-stabilizing during operation, may be used without guyline(s) provided the equipment is used with guylines when required by the manufacturer.

(6) Portable spars or towers and their parts must be inspected by a qualified person whenever:

(a) The portable spar or tower is lowered;

(b) Its safe condition is in doubt; or

(c) When damage from over-stress or any other source is noted or suspected. Before being used again, the part in question must be inspected by a suitable method and:

(i) Found safe;

(ii) Repaired by a qualified person; or

(iii) Replaced.

(7) Any structural modifications or additions that affect the capacity or safe operation of metal spars must be made under the direction of the manufacturer or a registered professional engineer. If such modifications or additions are made, the identification plate required in this section must reflect such changes.

(8) When moving metal spar logging machines, the spar must be lowered.

EXCEPTION: The spar may be raised when necessary for mobility if it is adequately supported to ensure the stability of the machine during movement.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-553, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-553, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040,

49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-553, filed 9/21/79.]

WAC 296-54-555 Metal spar guyline safety straps.

(1) A metal spar guyline safety strap or equivalent device must be installed at the bight of the guylines to prevent guylines from falling vertically more than five feet in case of structural or mechanical failure of the guyline attachment.

(2) The safety strap or equivalent devices must be equal to the strength of one guyline being used.

(3) Using cable clips or clamps to join the ends of portable spar or tower guyline safety straps is prohibited, unless used to secure the end of a farmer's eye.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-555, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-555, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-555, filed 8/20/80. Statutory Authority: RCW 49.17.040 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-555, filed 9/21/79.]

WAC 296-54-557 Wire rope. (1) Wire rope must be of the same or better grade as originally recommended by the equipment manufacturer.

(2) Wire rope must be removed from service when any of the following conditions exist:

(a) In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;

(b) Wear of one-third the original diameter of outside individual wires. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure;

(c) Evidence of any heat damage from any cause;

(d) Reductions from nominal diameter of more than 3/64-inch for diameters to and including 3/4-inch, 1/16-inch for diameters 7/8-inch to 1-1/8-inch, inclusive, 3/32-inch for diameters 1-1/4-inches to 1-1/2-inches inclusive;

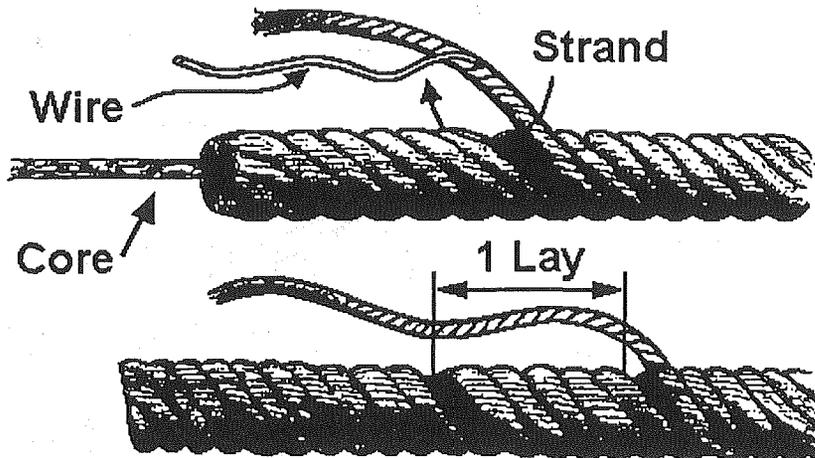
(e) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection;

(f) In standing ropes, when twelve and one-half percent of the wires are broken within a distance of one wrap (lay); and

(g) Corroded, damaged, or improperly applied end connections.

(3) Wire rope must be kept lubricated as conditions of use require.

EXCEPTION: This section does not apply to chokers.



Wire rope selection is an important element in cable logging.

WIRE ROPE

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-557, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-557, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-557, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-557, filed 9/21/79.]

WAC 296-54-55710 Wire rope—Cutting. (1) Hard hammers must not be used for cutting cable with a wire ax or when splicing.

(2) Employees must wear eye protection when cutting lines.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-55710, filed 8/18/99, effective 12/1/99.]

WAC 296-54-55720 Wire rope—Splicing. (1) Marlin spikes must be used for splicing. The marlin spikes must be:

(a) Large enough for the size of the line being spliced; and

(b) Maintained in good condition;

(2) Short splices, eye-to-eye splices, cat's paws, and knots are prohibited except for moving nonload-bearing lines. Knots may be used on single drum tractors, grapple pickup lines, and dropline carriage systems using slider bells if the knot is tied on the end of the dropline.

(3) Wire rope one-half inch in diameter or less must be tucked at least two times provided the rope is used only as a strawline.

(4) Eye splices in all regular lay lines and straps must be tucked at least three times.

(5) Eye splices in lang lay lines must be tucked at least four times.

(6) Splices, other than eye splices, in lang lay loading lines are prohibited.

(7) Long splices must be used to permanently join regular lay running line.

(8) The length of line strand to be unraveled to make a long splice in wire rope must be as shown in Table 2: Length of Line Strand. The full length of the splice is twice the length of the rope to be unraveled.

Table 2: Length of Line Strand

Rope Diameter	To Be Unraveled	Total Length
1/4"	8'	16'
3/8"	8'	16'
1/2"	10'	20'
5/8"	13'	26'
3/4"	15'	30'
7/8"	18'	36'
1"	20'	40'
1-1/8"	23'	46'
1-1/4"	25'	50'
1-3/8"	28'	56'
1-1/2"	30'	60'
1-5/8"	33'	66'
1-3/4"	35'	70'
1-7/8"	38'	76'
2"	40'	80'

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-55720, filed 8/18/99, effective 12/1/99.]

WAC 296-54-55730 Wire rope—Attaching end fastenings. (1) The manufacturer's recommendations must be followed when attaching sockets and other end fastenings.

(2) Using cable clips or clamps for joining lines is prohibited, except to transfer slack lines from one place to another.

(3) When U-bolt cable clips are used to form eyes, Table 3: U-bolt Cable Clips to Form Eyes must be used to determine the number and spacing of clips.

Table 3: U-bolt Cable Clips to Form Eyes

Improved Plow Steel Diameter of Rope	Number of Clips Forged	Required Other Material	Minimum Space Between Clips
3/8 to 5/8 inch	3	4	-3/4 inch
3/4 inch	4	5	4-1/2 inch

Improved Plow Steel Diameter of Rope	Number of Clips Forged	Required Other Material	Minimum Space Between Clips
7/8 inch	4	5	5-1/4 inch
1 inch	5	6	6 inches
1-1/8 inch	6	6	6-3/4 inch
1-1/4 inch	6	7	7-1/2 inch
1-3/8 inch	7	7	8-1/4 inch
1-1/2 inch	7	8	9 inches

(4) When U-bolt cable clips are used:

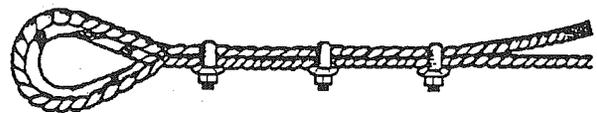
(a) For eye splices, the U-bolt wire rope clip must be attached so that the U section is in contact with the dead or short end of the rope (see Figure 3: Eyes Formed with U-bolt Cable Clips);

(b) U-bolt cable clips must be spaced at least six rope diameters apart to obtain the maximum holding power. Nuts must be tightened evenly and tightened again after application of the first sustained load. After the rope has been used and is under tension, the clips must be tightened again to take up any looseness caused by the tension reducing the rope diameter;

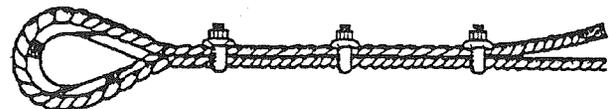
(c) With high strength wire rope, one more U-bolt cable clip must be added for each grade above improved plow steel; and

(d) Eyes formed with U-bolt cable clips are prohibited with running lines or straps.

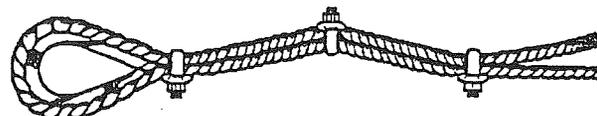
APPLICATION OF WIRE ROPE U-BOLT CLIPS Crosby Type



1. CORRECT METHOD – U-Bolts of clips on short end of rope. (No distortion on live end of rope)



2. WRONG METHOD – U-Bolts on live end of rope. (This will cause mashed spots on live end of rope)



3. WRONG METHOD – Staggered clips; two correct and one wrong. (This will cause a mashed spot in live end of rope due to wrong position of center clip)

4. After rope is in service, and is under tension, tighten clips to take up decrease in rope diameter.

Figure 3: Eyes Formed with U-bolt Cable Clips

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-55730, filed 8/18/99, effective 12/1/99.]

WAC 296-54-559 Decodified. See Disposition Table at beginning of this chapter.

WAC 296-54-561 Guylines. (1) Guylines must be used with any logging equipment when required by the equipment manufacturer.

(2) At least the minimum number and angle of guylines recommended by the equipment manufacturer must be used.

(3) Unless otherwise specified by the equipment manufacturer, guylines must be of the following sizes:

(a) In highlead logging, the head spar guylines must be equal in breaking strength to the mainline.

(b) In skyline logging, if the skyline is one and three-eighths inch or greater, the head spar guylines must be at least one and three-eighths inch. If the skyline is less than one and three-eighths inch, the head spar guylines must be equal in breaking strength to the skyline.

(c) On all other cable logging machines, the guylines must have a breaking strength at least equal to the mainline/skyline, whichever is largest.

(d) Tail/lift and intermediate support trees must be adequately guyed to withstand any stress to which the tree may be subjected.

(4) When guylines are required for spars they must be positioned according to Table 4: Guyline Positioning, or according to the manufacturer's specifications.

Table 4: Guyline Positioning

Number of Guys on Spar	Number of Guys Sharing Load	Positioning Figure Number
1	1	4 - 1 Guyline Case
2	2	5 - 2 Guyline Case
3	3*	6 - 3 Guyline Case
	2	7 - 3 Guyline Case (2)
4	2	8 - 4 Guyline Case
5	2	9 - 5 Guyline Case
	3	10 - 5 Guyline Case (2)
6	2	11 - 6 Guyline Case
	3	12 - 6 Guyline Case (2)
7	3	13 - 7 Guyline Case
8	2	14 - 8 Guyline Case
	4	15 - 8 Guyline Case (2)

*For metal spars designed to operate without snap guy

(5)(a) Guylines supporting metal spars must be made of plow steel or better material and must be maintained in good condition.

(b) Guylines for tail/lift and intermediate support trees may be made of synthetic material and must be used according to the manufacturer's recommendations.

(6) Load bearing guyline angles must be no greater than fifty degrees measured horizontally (See Figure 18: Maximum Angle for Load Bearing Guylines and Skyline). If suit-

able anchors are unavailable or the terrain is so steep that the guyline angle exceeds fifty degrees, an additional guyline must be rigged to oppose the load.

(7) Guylines must be kept securely tightened while the spar, tree, equipment or rigging they support is in use.

(8) Power driven devices must be securely anchored when used to tighten guylines. Holding such devices is prohibited.

(9) All trees that interfere with proper alignment, placement, or tightening of guylines must be fell.

(10) Guylines must be hung in a manner to prevent a excessive bight or fouling when they are tightened.

(11) The use of loops or molles for attaching guylines is prohibited.

(12) The U part of shackles or sleeves must be around the guyline and the pin passed through the eye of the guyline.

(13) Splicing of guylines is prohibited except to make an eye splice.

(14) All spliced guyline eyes must be tucked at least three times.

(15) Extensions to guylines must be:

(a) Equal in breaking strength to the guyline to which they are attached; and

(b) Connected only by a shackle connecting two spliced eyes, pressed eyes or by double-end hooks. Connections must have at least one and one-half times the strength of the guyline.

(16) When hanging a block or jack on a guyline, only sleeve-type safety pin shackles must be used. The shackle sleeve shall have not less than two and one-half times the line diameter bearing on the guyline.

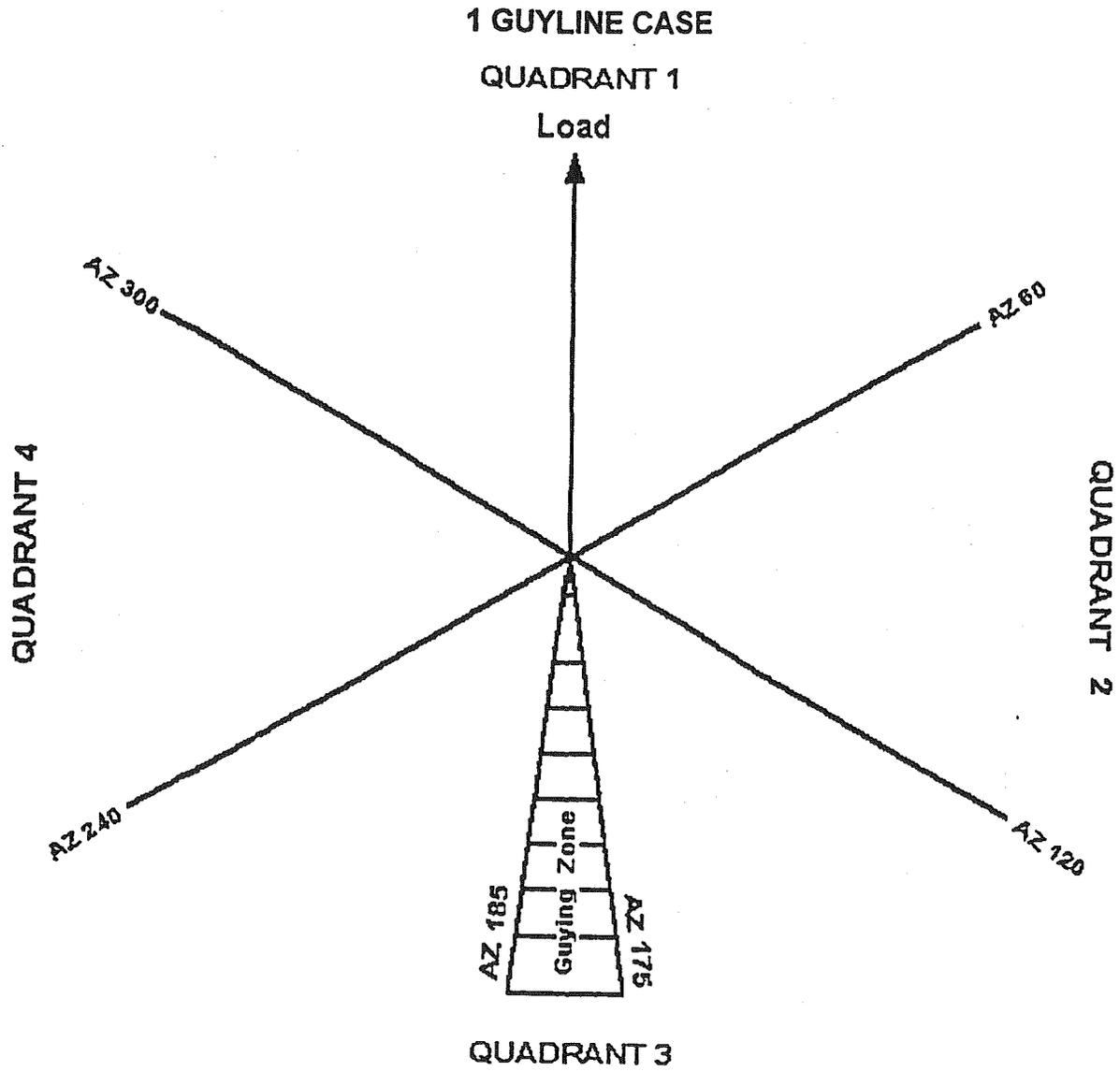


Figure 4: 1 Guyline Case

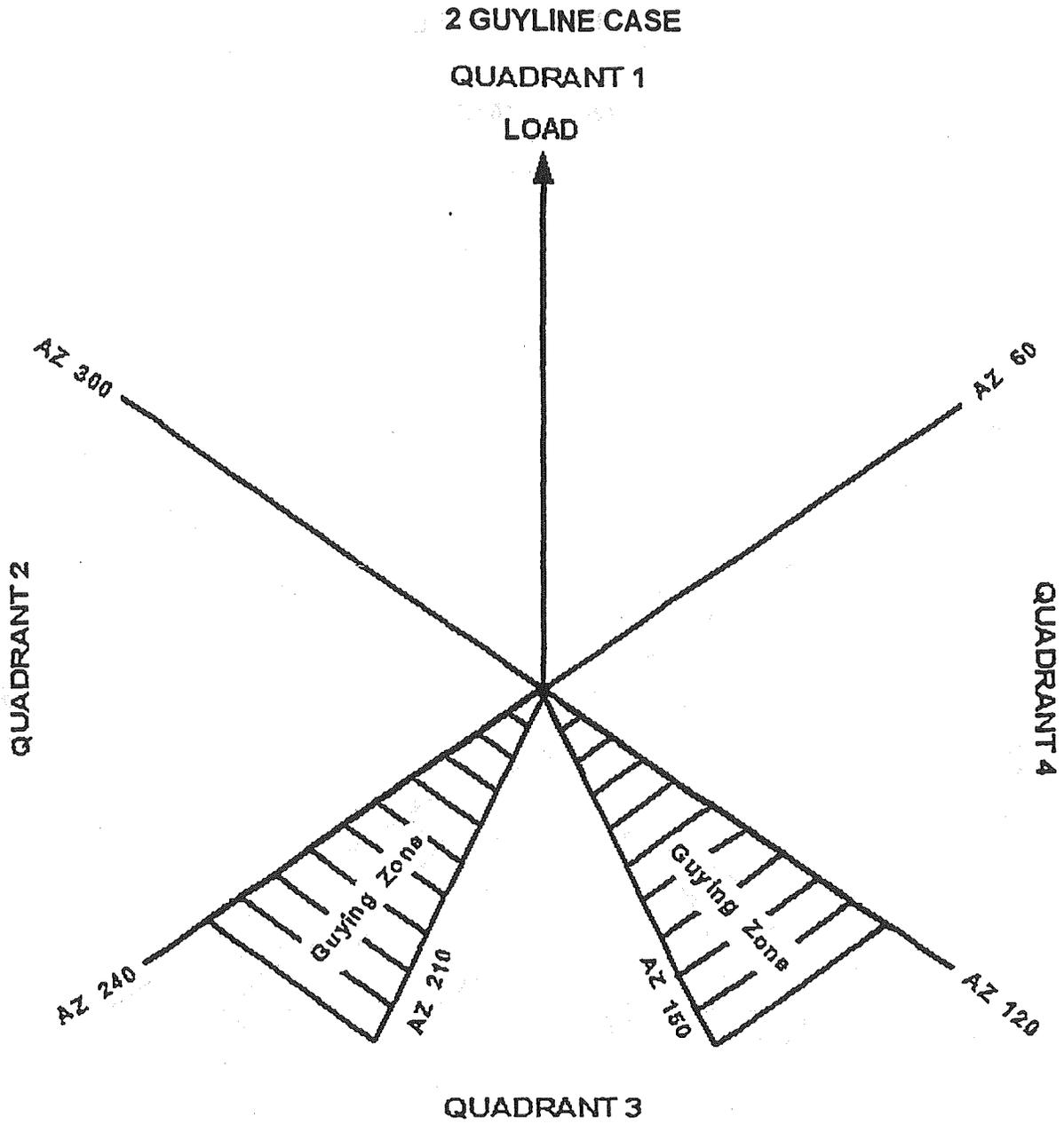


Figure 5: 2 Guyline Case

3 GUYLINE CASE

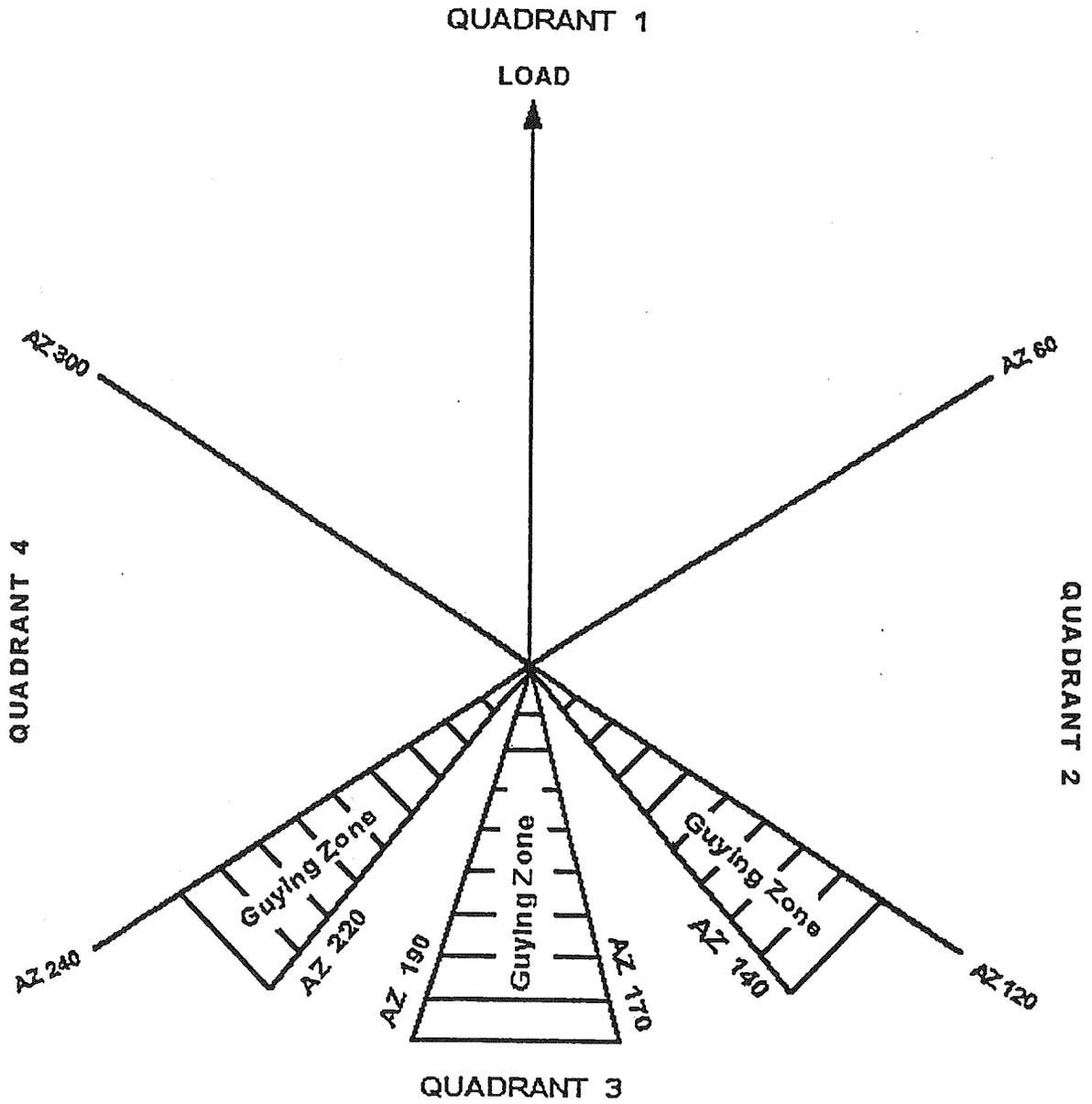


Figure 6: 3 Guyline Case

3 GUYLINE CASE

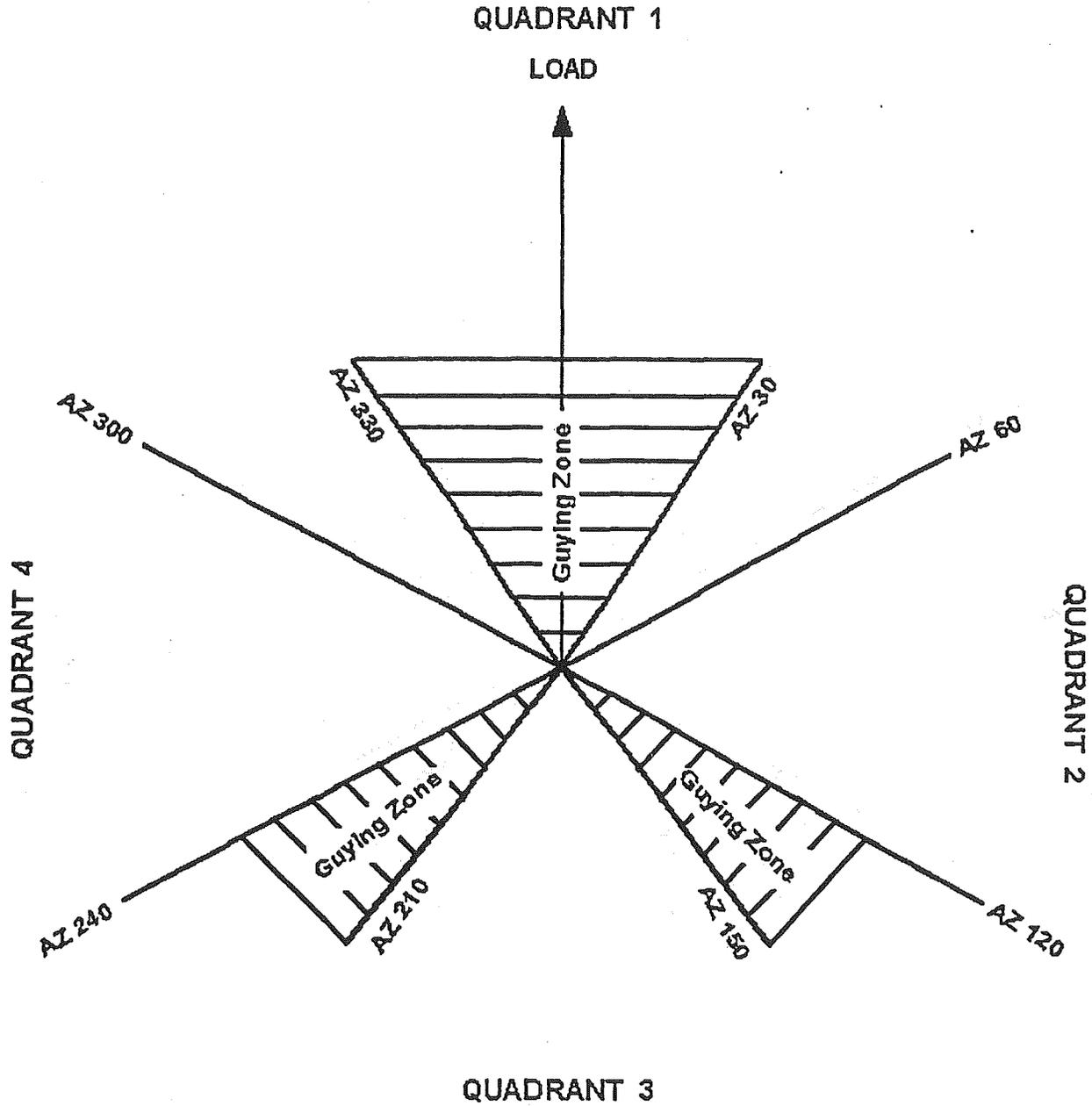


Figure 7: 3 Guyline Case (2)

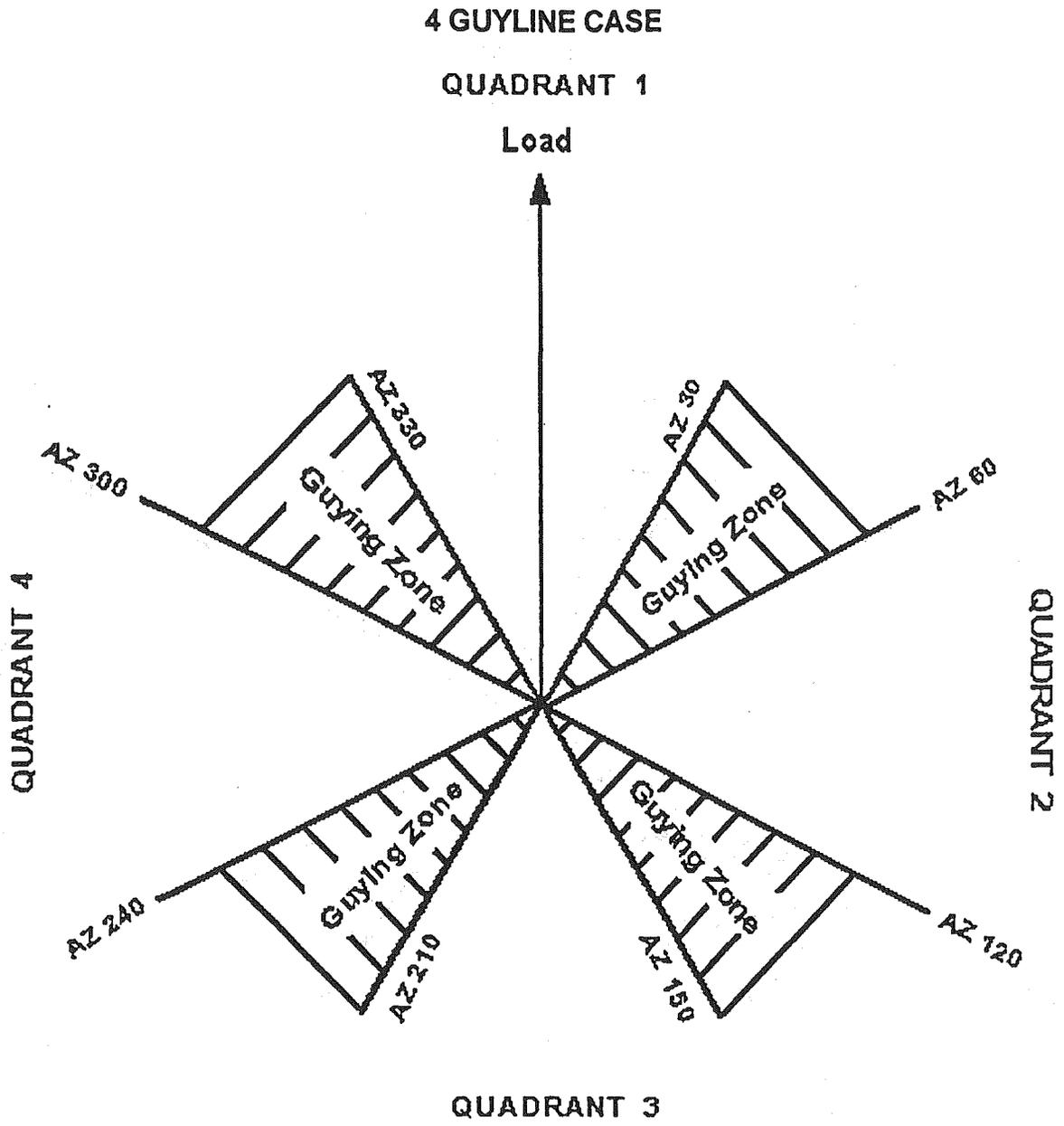


Figure 8: 4 Guyline Case

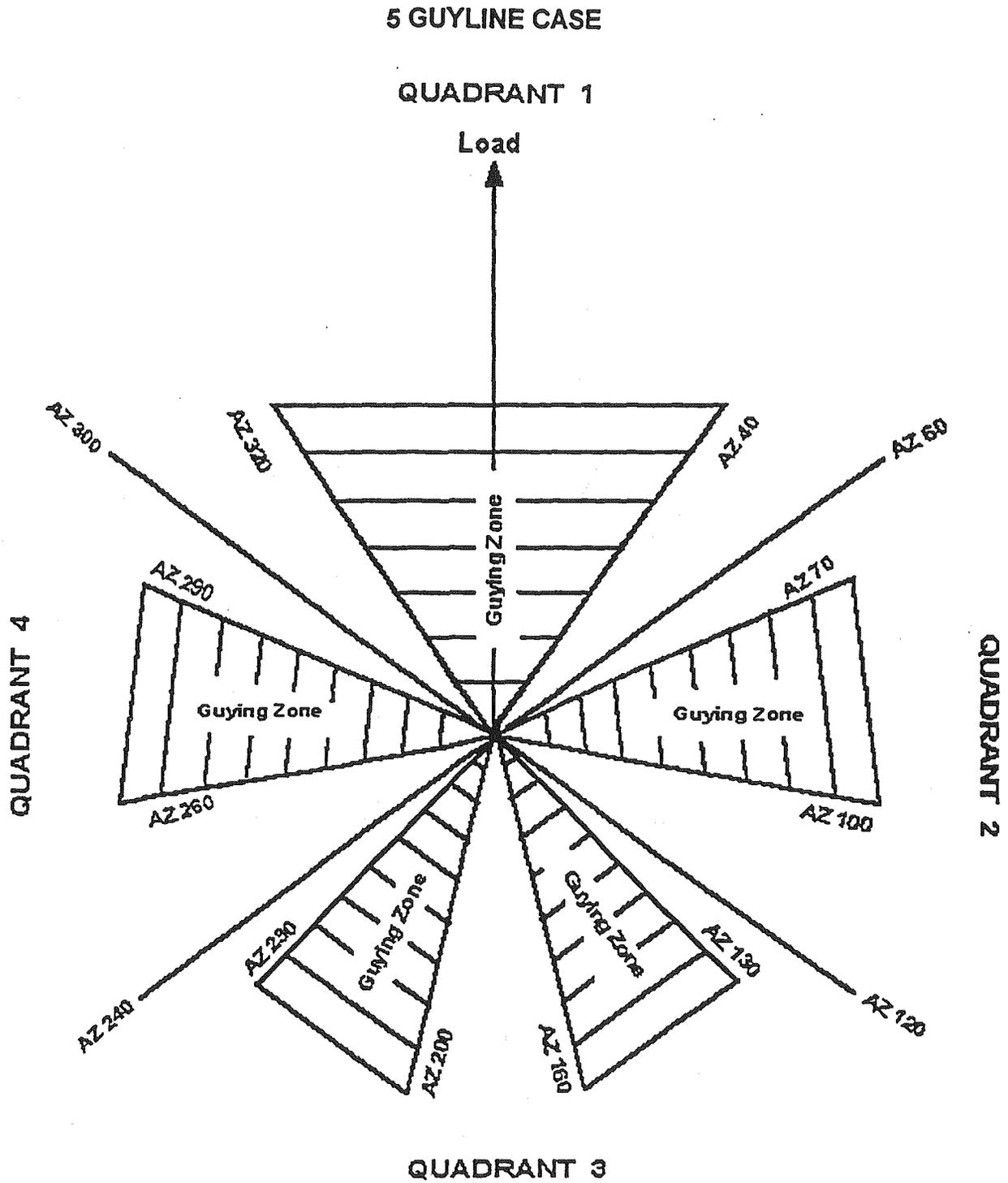


Figure 9: 5 Guyline Case

5 GUYLINE CASE

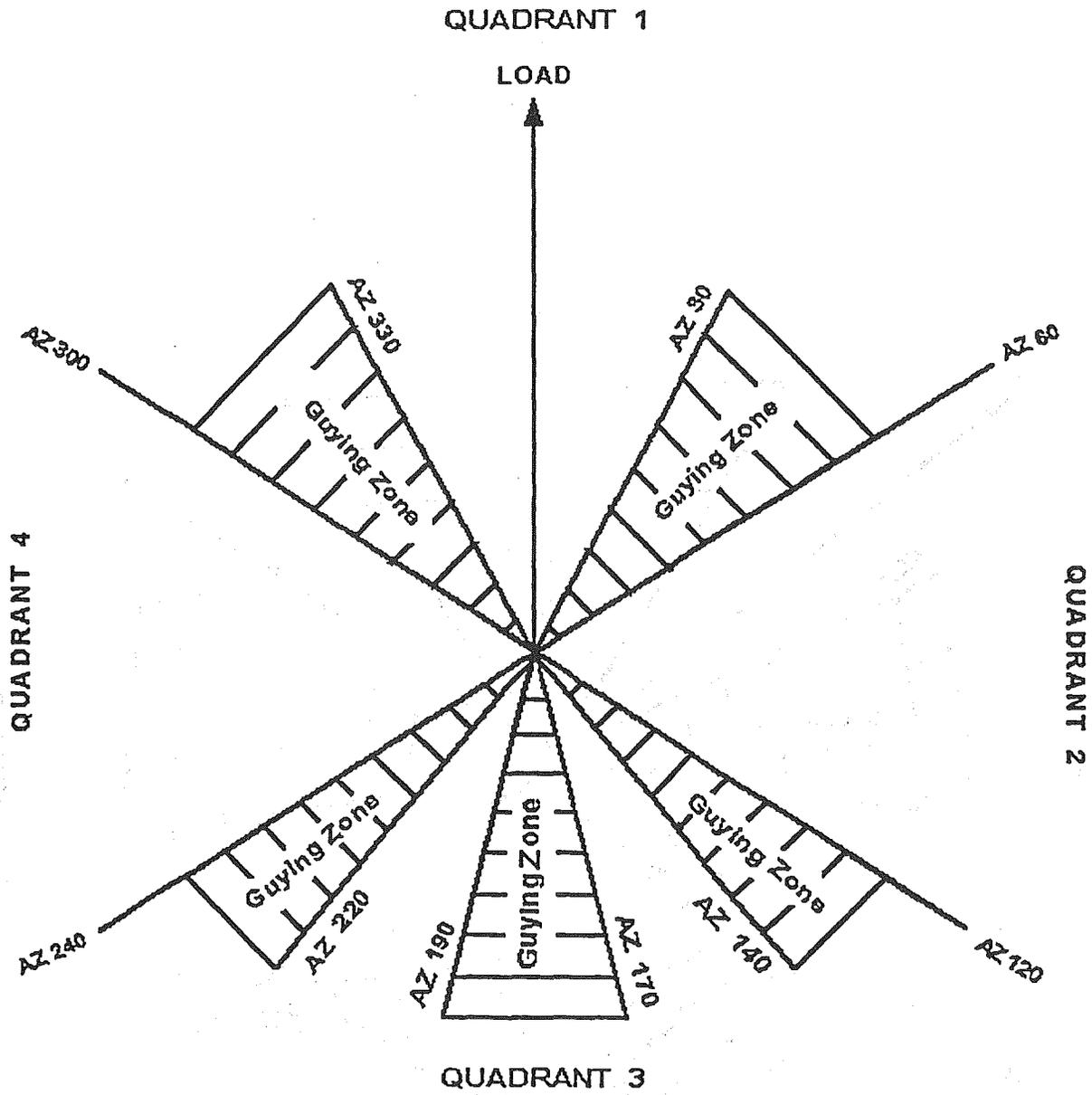


Figure 10: 5 Guyline Case (2)

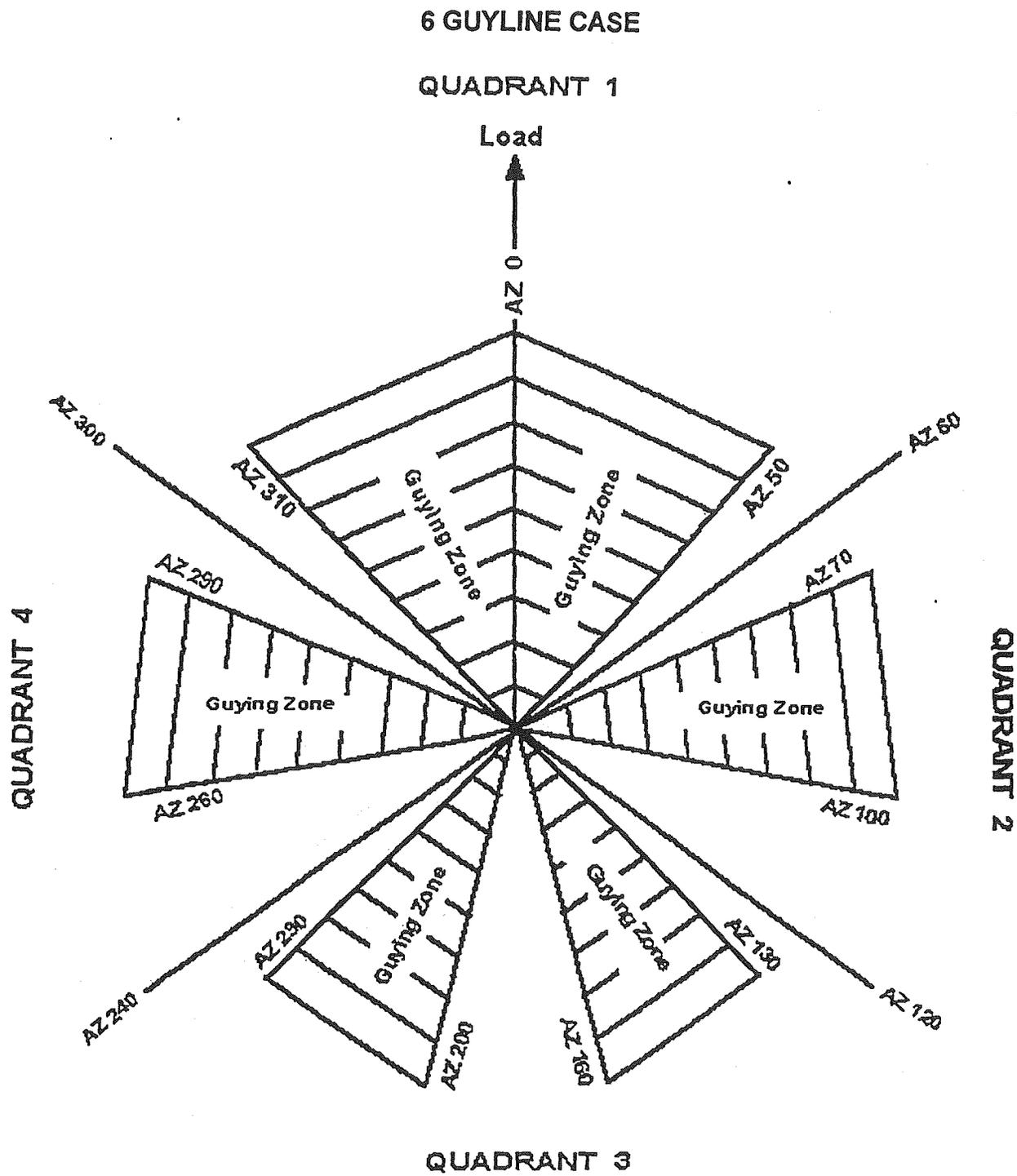


Figure 11: 6 Guyline Case

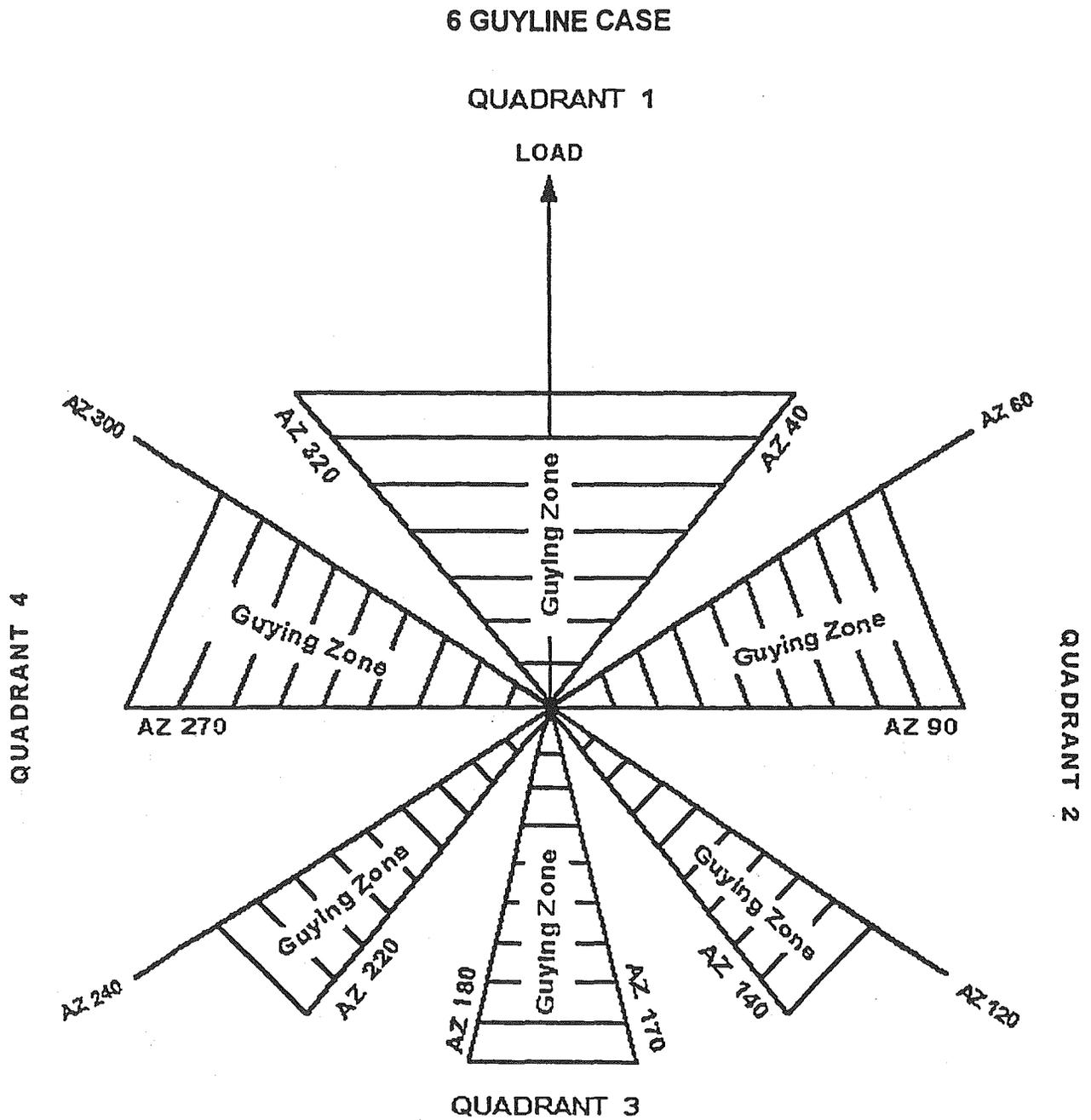


Figure 12: 6 Guyline Case (2)

7 GUYLINE CASE

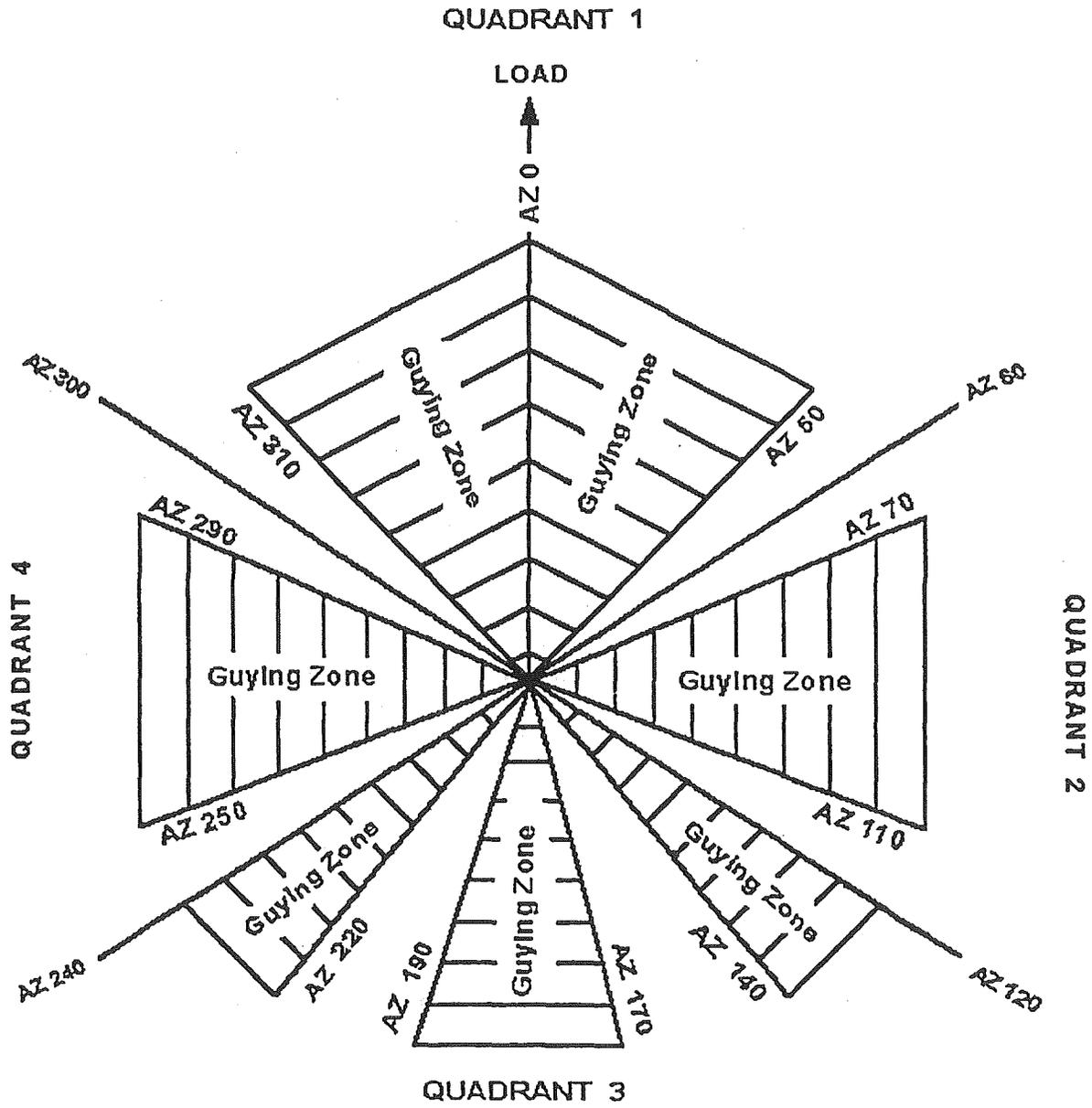


Figure 13: 7 Guyline Case

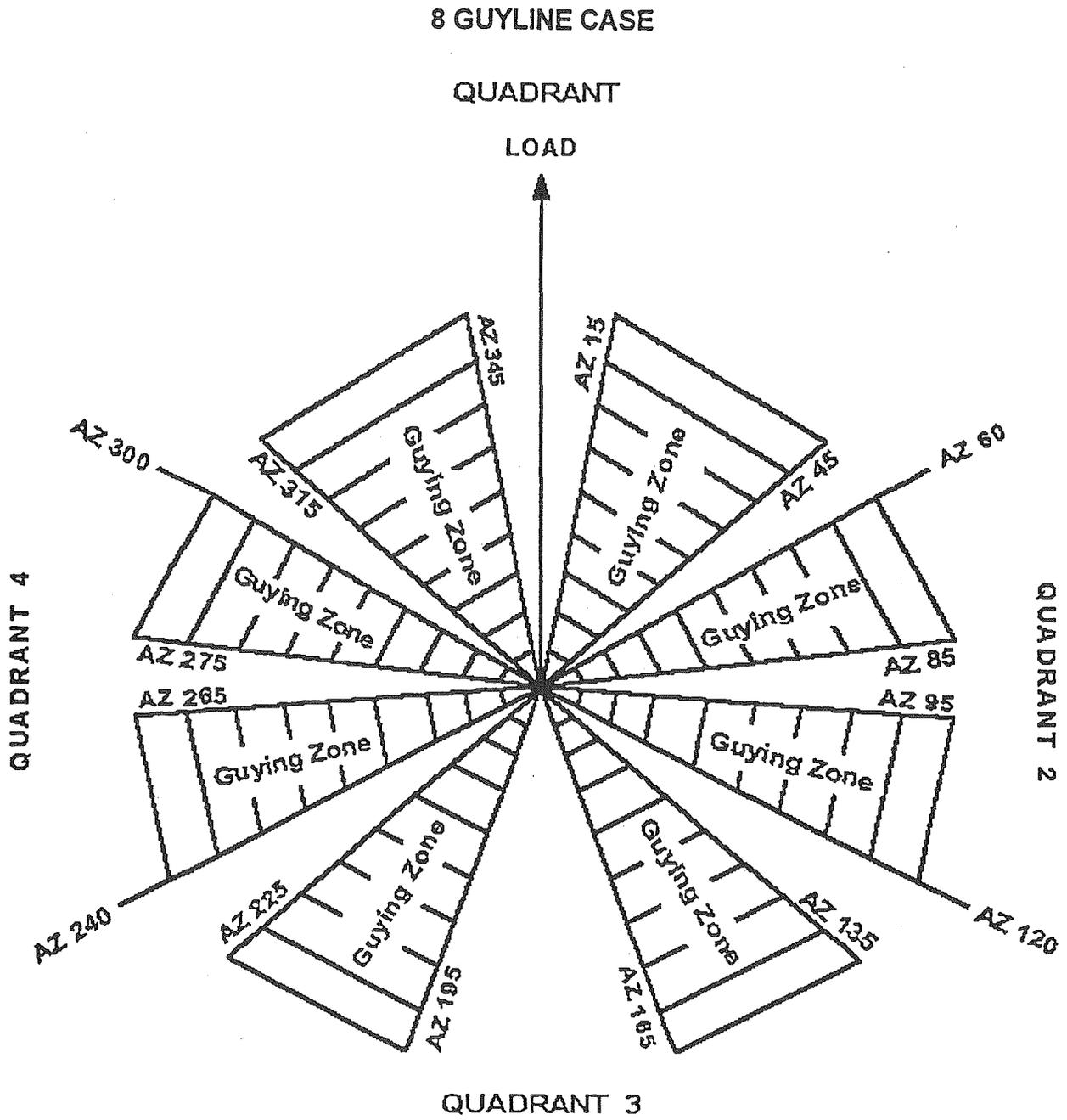


Figure 14: 8 Guyline Case

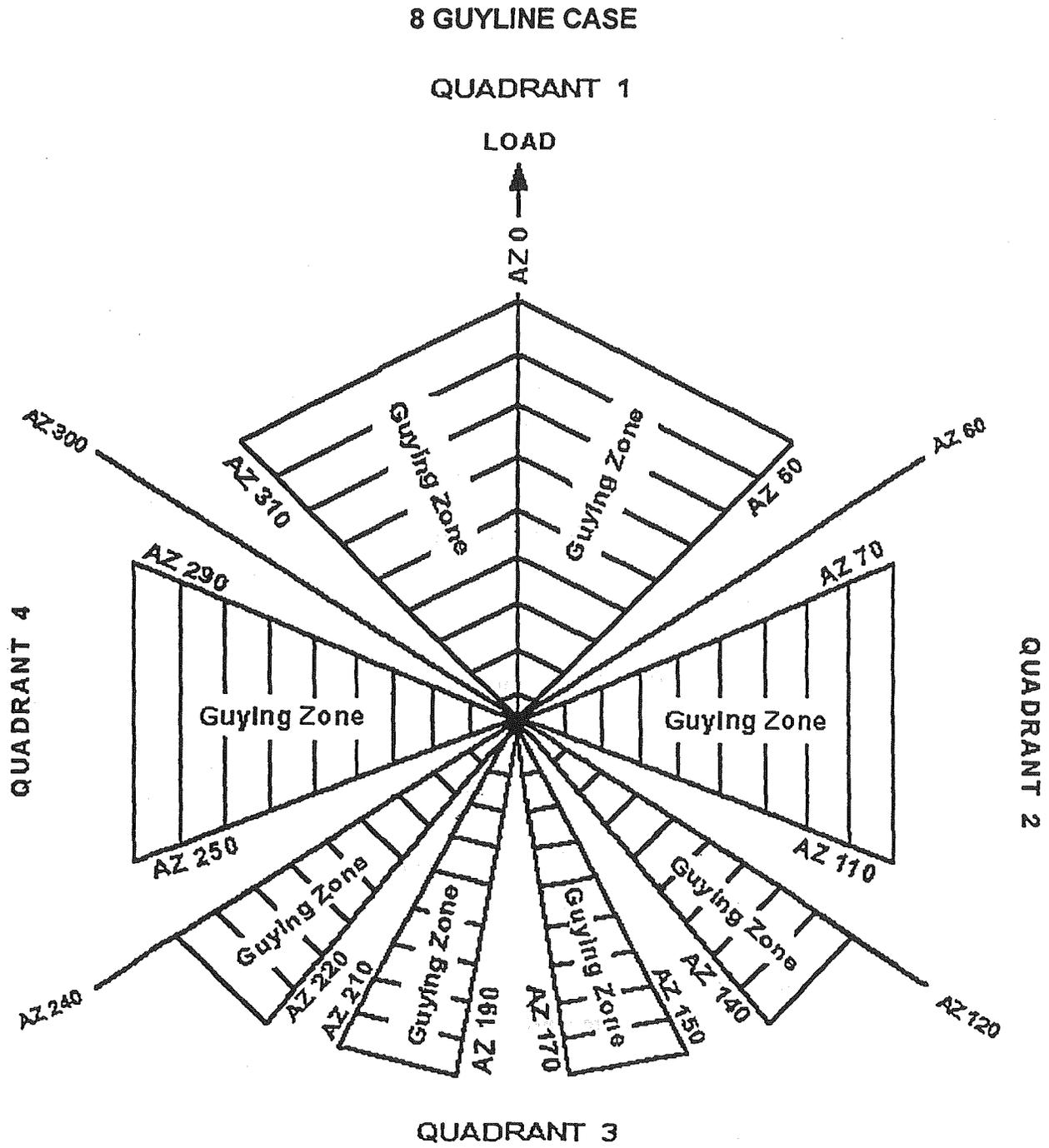


Figure 15: 8 Guyline Case (2)

POSITIONING GUYLINES IN BACK OF TREE

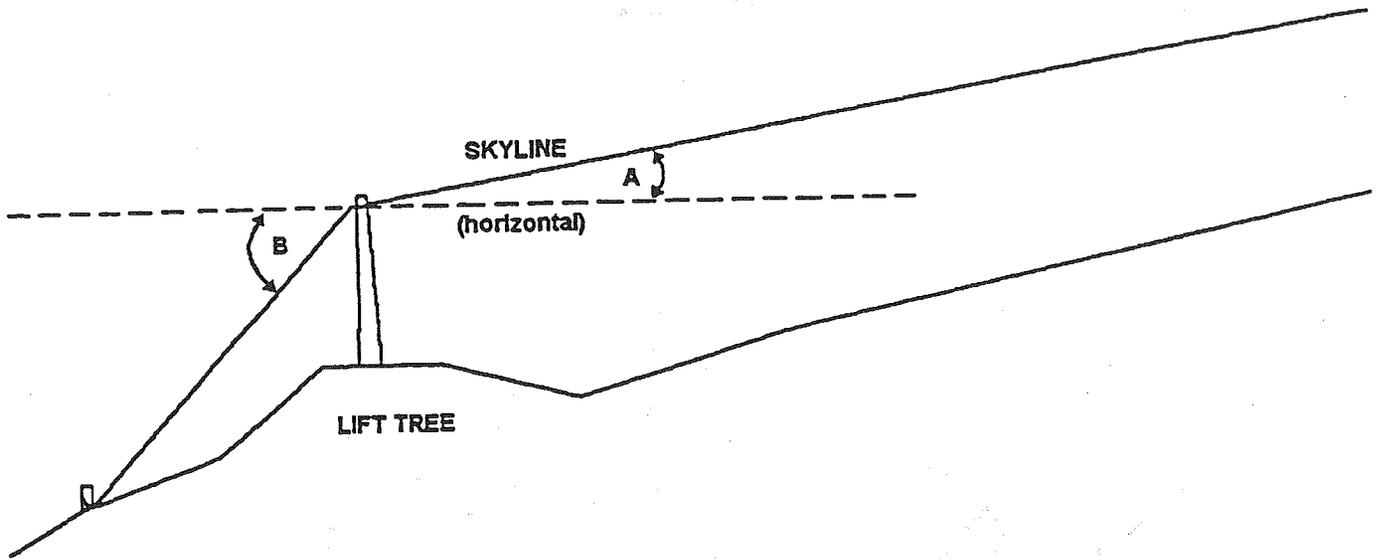


Figure 16: Positioning Guylines in Back of Tree

POSITIONING GUYLINES IN FRONT OF TREE

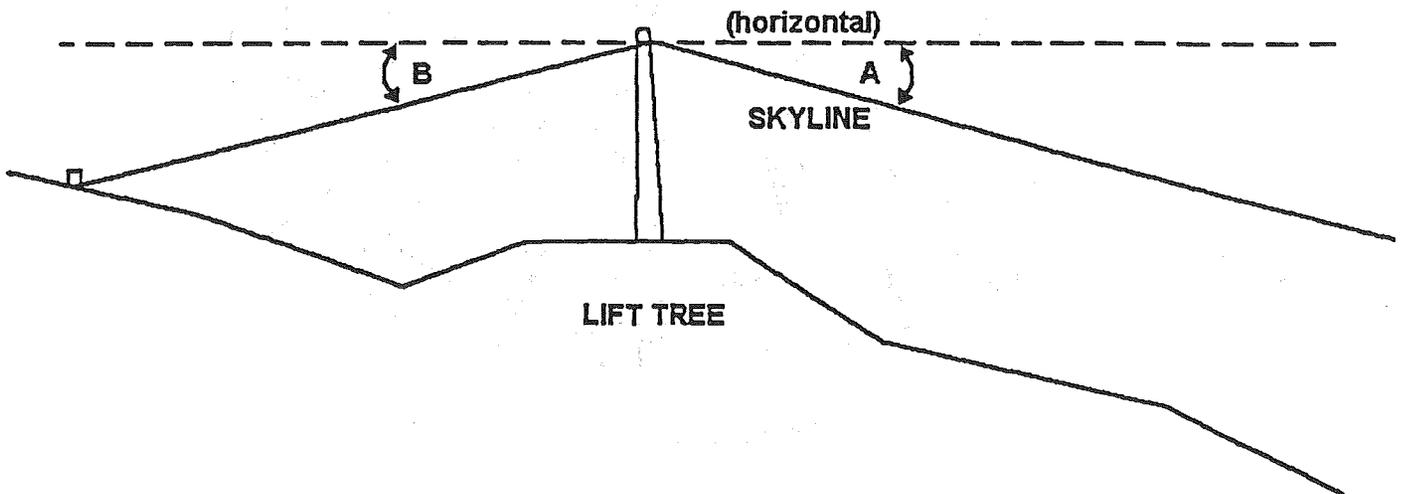


Figure 17: Positioning Guylines in Front of Tree

MAXIMUM ANGLE FOR LOAD BEARING GUYLINES AND SKYLINE

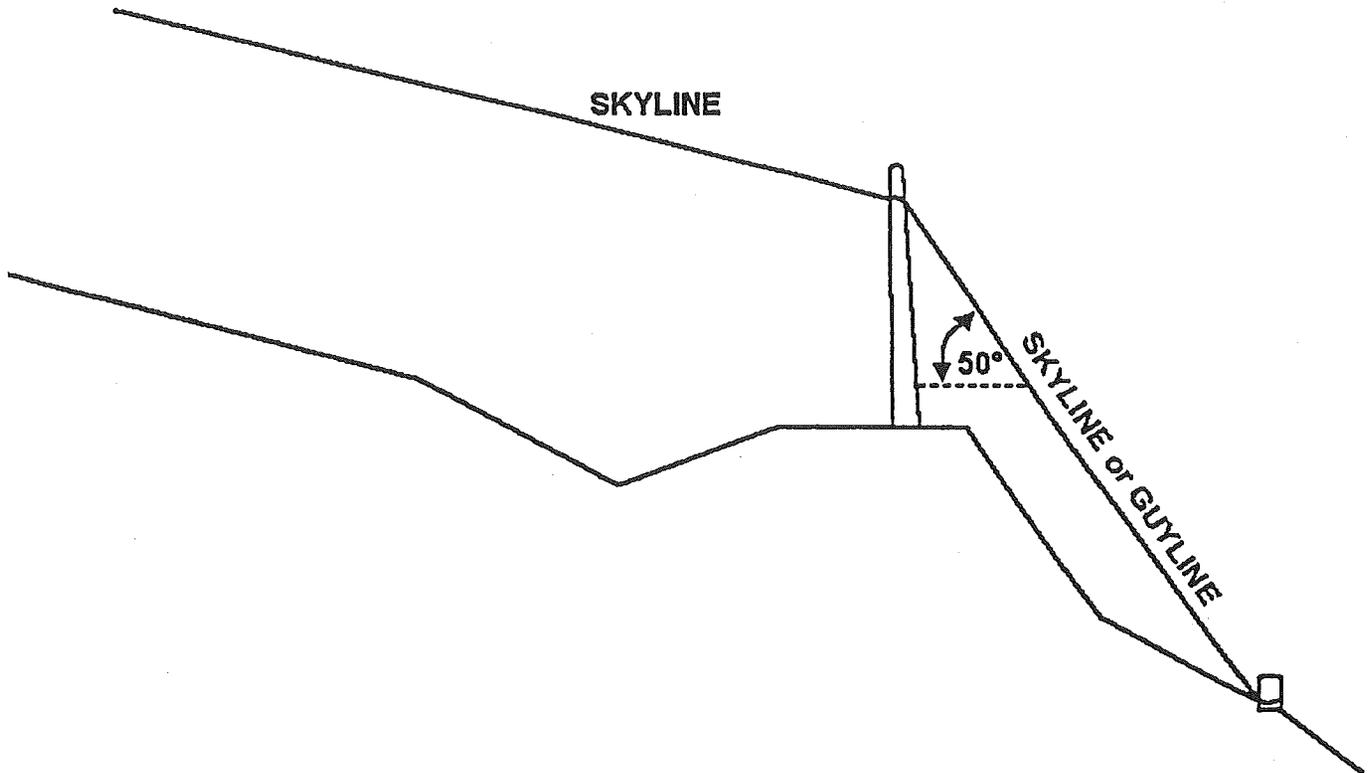


Figure 18: Maximum Angle for Load Bearing Guylines and Skyline

4 GUYLINE CASE – TAIL/LIFT TREE GUYING

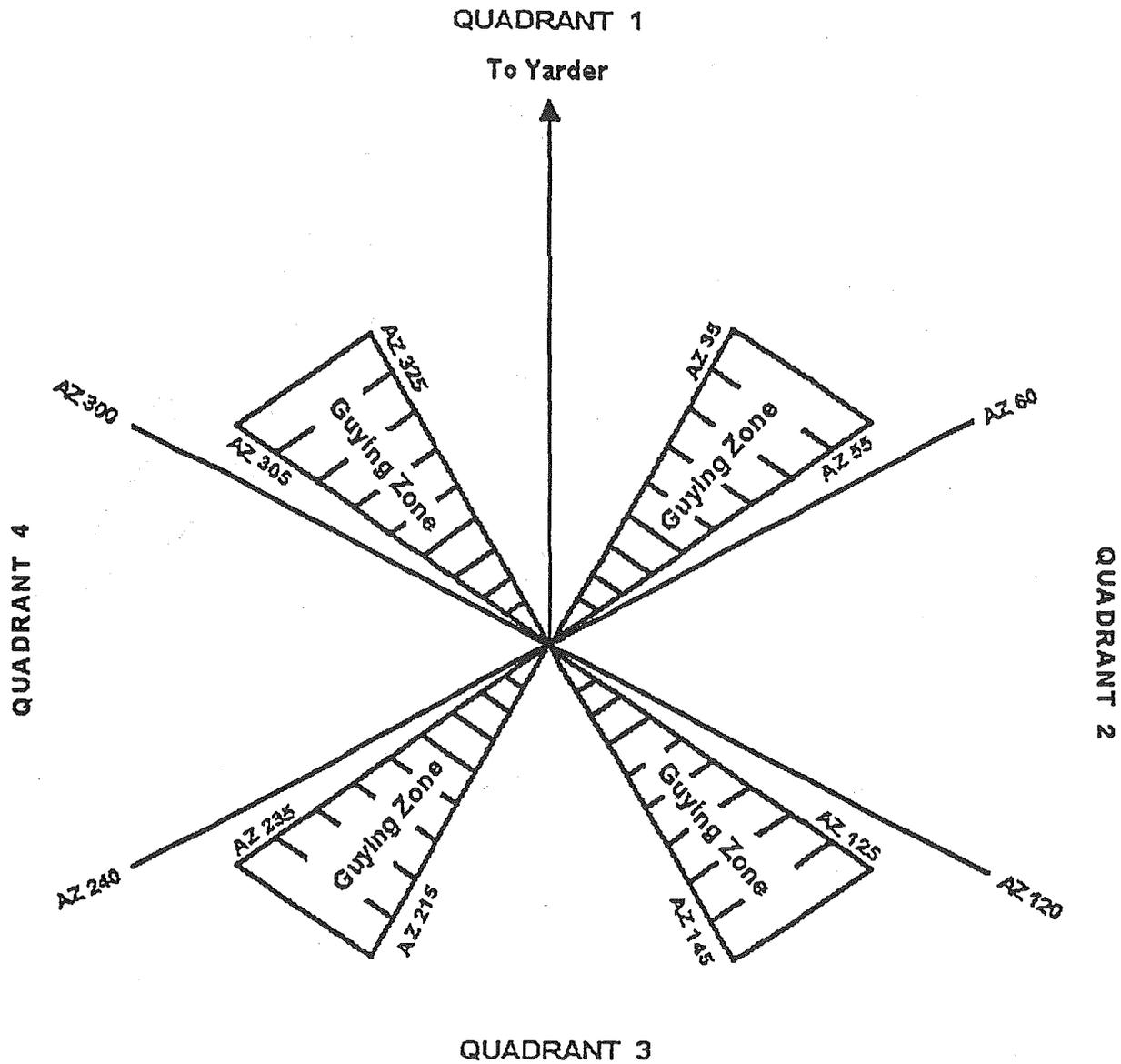


Figure 19: 4 Guyline Case – Tail/Lift Tree Guying

**2 GUYLINE CASE
TAIL/LIFT TREE GUYING**

(gravity outhaul, non-slackpulling carriage)

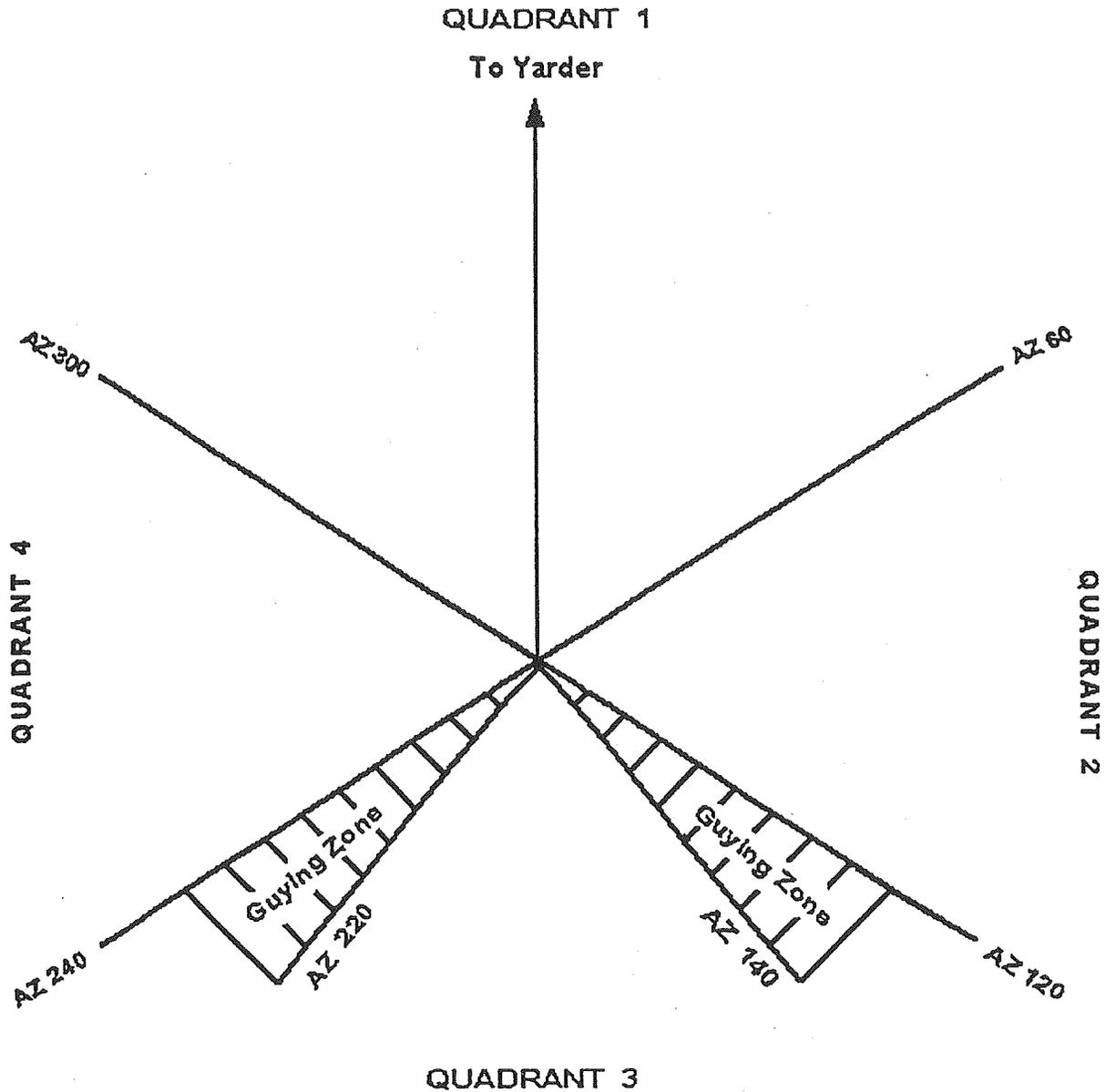


Figure 20: 2 Guyline Case – Tail/Lift Tree Guying
(gravity outhaul, non-slackpulling carriage)

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-561, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-561, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-561, filed 9/21/79.]

WAC 296-54-563 Guying tail/lift trees. (1) Whenever a tail/lift tree is within reach of the work area and the rigging is placed on the tail/lift tree at a height greater than five times the tree diameter (dbh), at least two guylines must be used unless tree size and strength and rigging position eliminate the need for guylines or employees must be in the clear before the go-ahead signal is given.

(2) Guylines on tail/lift trees must not be anchored to standing trees unless:

(a) There is no danger that the guyline anchor tree will enter the work area;

(b) The guyline anchor tree is properly tied back; or

(c) Employees are in the clear of the guyline anchor tree(s) before the go-ahead signal is given.

(3) When guylines are required, they must be positioned according to Figure 16: Positioning Guylines in Back of Tree and Figure 19: 4 Guyline Case - Tail/Lift Tree Guying as follows:

(a) When the angle between the horizontal and skyline coming into the tree (angle A in Figure 16) is less than the angle between the horizontal and the skyline leaving the tree towards the anchor point (angle B in Figure 16), the guylines must be in back of the tail/lift tree as specified in Figure 19.

(b) If angle A is greater than angle B, then the guys must be placed in front of the tail/lift tree. This situation usually occurs when a tail/lift tree is used during downhill yarding as shown below. Placing the guys on the uphill side only helps to pull the tail/lift tree over uphill.

(c) If a suitable anchor is not available within a specified shaded zone, two guylines may be used instead of one guyline, provided a guyline is placed on either side of and as near as possible to the affected shaded zone.

(4) Tail/lift trees must be supported by additional guylines if necessary, to ensure the stability of the tree.

(5) Guylines for tail/lift trees may be made of synthetic material and must be used according to the manufacturer's recommendation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-563, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-563, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-563, filed 9/21/79.]

WAC 296-54-565 Intermediate support trees. (1)

Trees used as intermediate supports must be sound and straight from the ground to the point of strap attachment; and must be rigged so that:

(a) Carriage clearance, as measured at the base of the support tree(s) is approximately five feet.

(b) The jackline/support line (see Figure 21: Critical Measurements of the Double Tree Intermediate Support System) is a single piece of line that is one-eighth inch larger than the tong or skidding line or rigged to provide a strength equal to a line one-eighth inch larger than the tong or skidding line.

(2) Vertical support trees must be firmly rooted.

(3) The base of all leaning tree supports must be prevented from moving by:

(a) Retaining twenty percent of the stump diameter in holding wood; or

(b) Other suitable rigging arrangements.

(4) Double tree supports must be rigged so that (see Figure 22: Double Tree Intermediate Support System):

(a) The minimum and maximum heights of the jack relative to the height of the block are as shown below:

(b) The angle the block line makes with the center line of the support tree is as follows:

(i) For skylines one and one-eighth inch and smaller, ten degrees in any direction; and

(ii) For skylines larger than one and one-eighth inch, deflection of the block is in the direction of the jack and a maximum of ten degrees.

(c) The loaded support tree does not displace more than two feet at the point of rigging attachment.

(5) Intermediate support trees must be adequately guyed to withstand any stress to which the tree may be subjected.

(6) Single tree supports must be guyed as follows:

(a) For skylines one and one-eighth inch and less, as shown in Figure 4; and

(b) For skylines larger than one and one-eighth inch, as shown in Figure 6.

(7) Double tree supports must be guyed as follows:

(a) For skylines one and one-eighth inch and less, no guys are required;

(b) For skylines larger than one and one-eighth inch, as shown in Figure 4.

(8) Guylines for intermediate support trees may be made of synthetic material and must be used according to the manufacturer's recommendations.

CRITICAL MEASUREMENTS OF THE DOUBLE TREE INTERMEDIATE SUPPORT SYSTEM

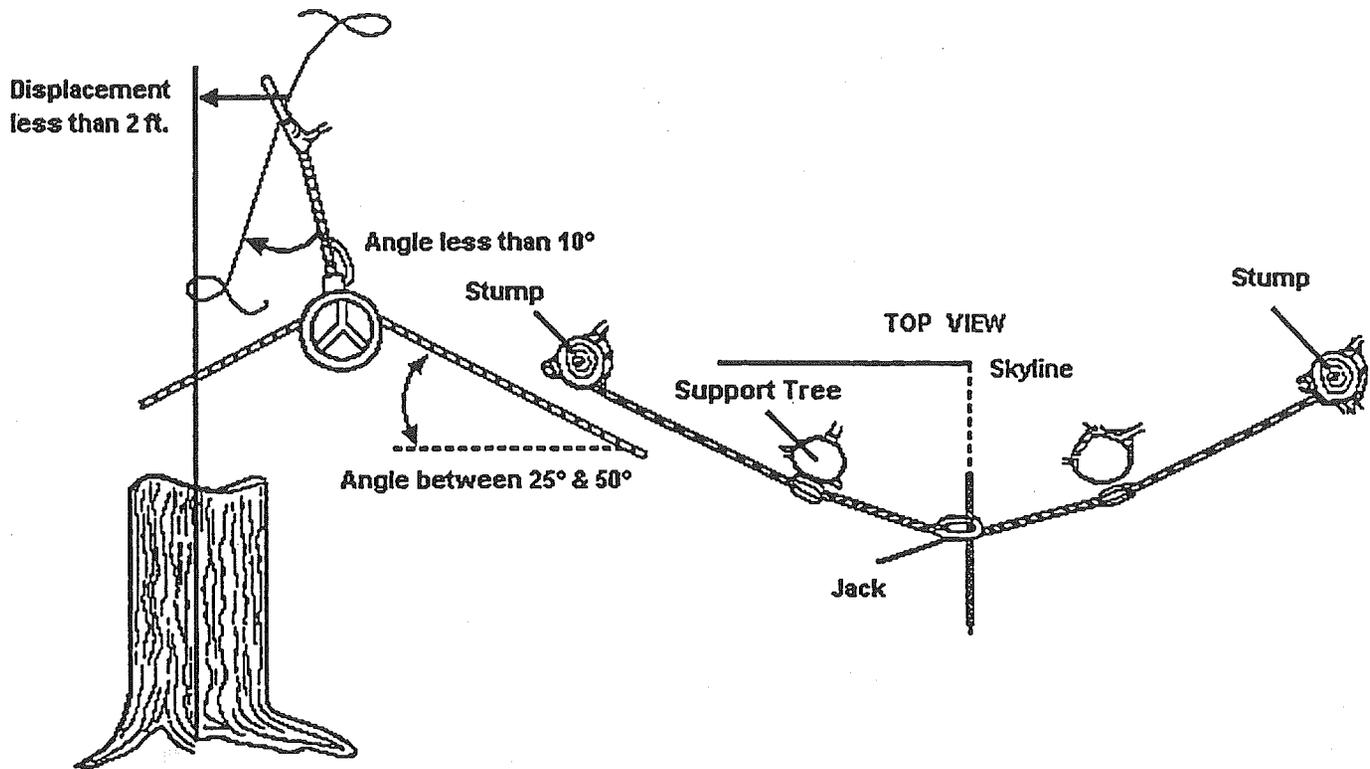
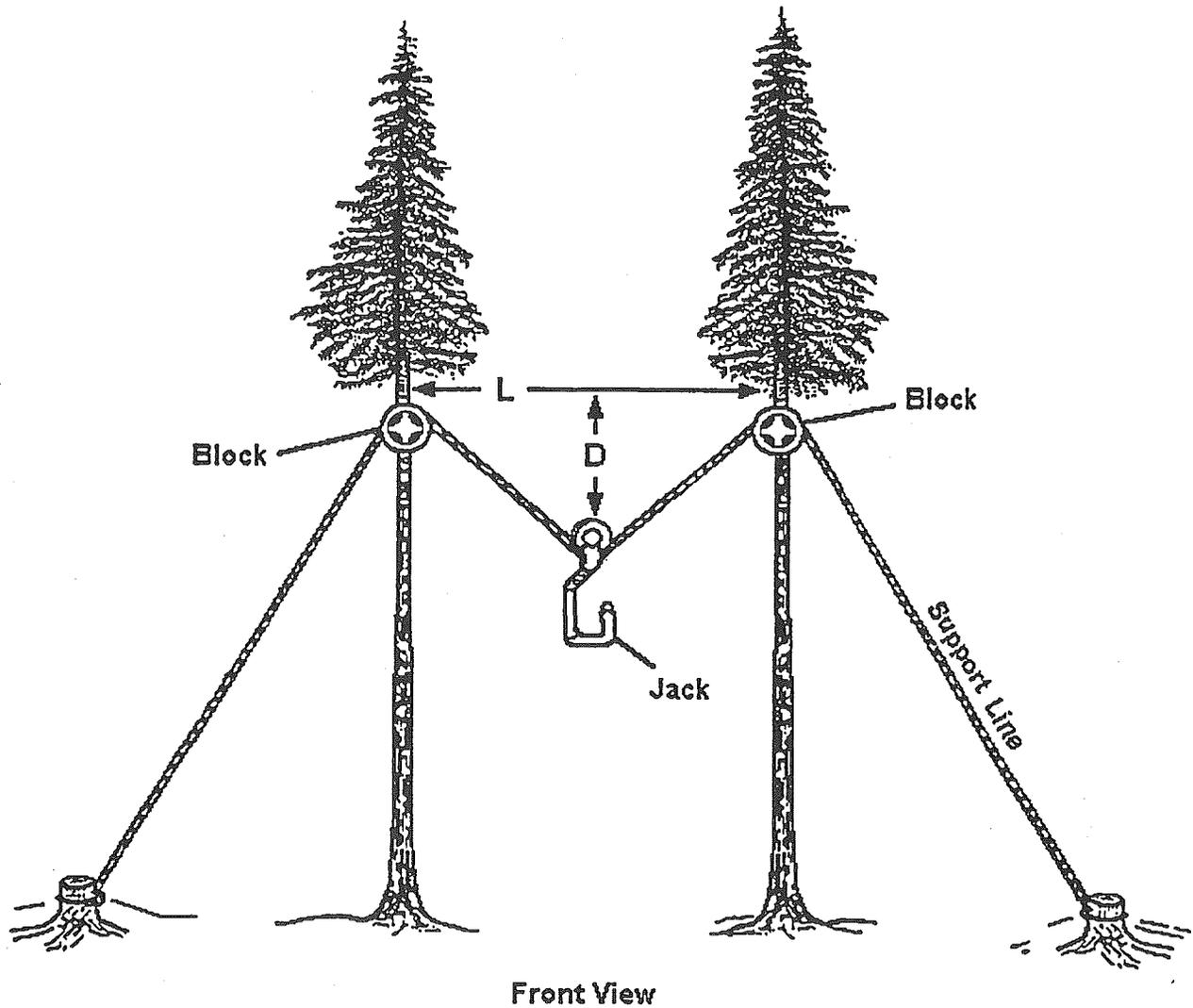


Figure 21: Critical Measurements of the Double Tree Intermediate Support System

**DOUBLE TREE
INTERMEDIATE SUPPORT SYSTEM**



$D = .25 \times L = \text{minimum distance}$

$D = .5 \times L = \text{maximum distance}$

Figure 22: Double Tree Intermediate Support System

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-565, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-565, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-565, filed 9/21/79.]

WAC 296-54-567 Rigging skylines. (1) A skyline must not make an angle greater than fifty degrees measured from the horizontal as it leaves the tail/lift tree. (See Figure 18: Maximum Angle for Load Bearing Guylines and Skyline.)

(2) When rigged in a tail/lift tree, the skyline must be anchored no more than eight degrees offline from the rearward projection of the skyline. If a suitable anchor is not available within the specified zone and the tail/lift tree is stable, a more suitable anchor outside the zone may be used. (See Figure 23: Skyline Positioning Limits Tail/Lift Tree.)

(3) A skyline must not be considered a guyline.

(4) Extensions to skylines must be equal in breaking strength to the skyline to which they are attached and must not alter the safe capacity of the tower. In addition, the extension must be attached only by a regular long splice or by a flush pin straight side shackle connecting the two eyes.

Note: See exception in WAC 296-54-553 (4)(e).

(5) Live, running or standing skylines must be anchored by one of the following methods:

(a) Directly to a stump or suitable manufactured anchor;

(b) Directly to the base of a standing tree provided the point of attachment is no more than three feet above the ground and no part of the tree will enter the work area if pulled over;

(i) If the tree will enter a work area, it must be properly tied back; or

(ii) Employee(s) must be in the clear before the go-ahead signal is given.

(c) By passing the skyline through a jack or block hung on a tail/lift tree before being anchored.

(6) Skylines or mainlines must be secured by one of the following methods:

(a) With at least two and one-half wraps, well spiked, or properly clamped (see WAC 296-54-569 (5)(b)); or

(b) Choked by using an approved shackle over the skyline or mainline with the pin through the eye; or

(c) With an approved strap having both eyes hung in a shackle and the knockout pin or safety pin through the eye of the skyline or mainline.

(7) Attaching the end of the skyline or slackline to the base of the rigged tail/lift tree is prohibited.

SKYLINE POSITIONING LIMITS TAIL/LIFT TREE

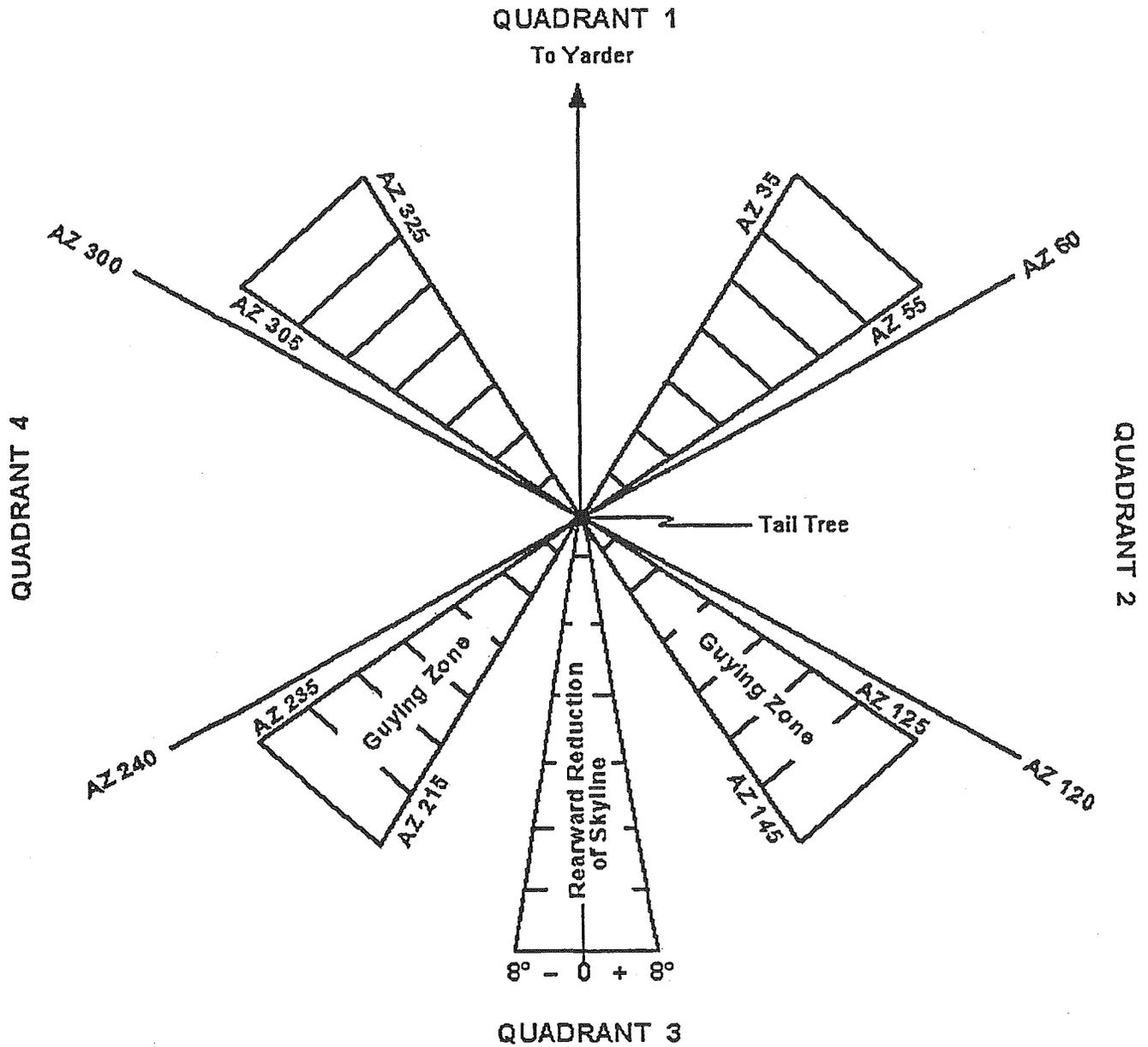


Figure 23: Skyline Positioning Limits Tail/Lift Tree

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-567, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-567, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-05-013 (Order 81-3), § 296-54-567, filed 2/10/81. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-567, filed 9/21/79.]

WAC 296-54-569 Anchoring. (1) Stumps used to anchor guylines and skylines must be carefully chosen for position, height, and strength. When necessary, stump anchors must be tied back to distribute the load.

(2) Stump anchors when spiked must be barked where attachments are to be made.

(3) Stump anchors must be adequately notched to keep the line in place and not adversely affect the stump strength.

(4) Employees must not stand close to the stump or tree or in the bight of lines as the guyline or wraps are being tightened.

(5) When spikes or cable clamps are used, guylines or skylines must be anchored with at least two and one-half wraps around the stumps. Wraps must:

(a) Be well secured with at least eight spikes or six staples in sound wood on the first and last wrap; or

(b) Have the end of the line secured with two wire rope clips on lines up to one inch diameter and three wire rope clips on lines one inch diameter and over.

(6) Properly installed deadman anchors are permitted. Guylines must not be directly attached to deadman anchors. Suitable straps or equally effective means must be used.

(7) Guylines of portable spars, wood spars or towers must not be anchored to standing trees if the unit is used as a head tree, except as specified in subsection (8) of this section.

(8) In special cases such as hanging on foreign ownership or in cable thinning operation where frequent moves make the retrieval of fell guyline trees difficult, the following will apply:

(a) Standing trees within reach of a work area or haul road may be used provided:

(i) They are solid;

(ii) Have a sound undisturbed root system;

(iii) If fell, would be suitable for a guyline stump or tailhold as required in subsection (1) of this section; and

(iv) Are properly tied back to distribute the load; or

(b) Guyline and/or tailhold anchor trees, when located so they will not fall into the work area or haul road, need not be tied back if stable.

Note: Under no circumstances must an employer accept a requirement, or be required to use standing trees to anchor guylines.

(9) Rock bolt anchors must be grouted, installed, tested, and maintained according to the rock bolt manufacturer's recommendations.

(10) Anchors must be regularly inspected while the logging operation is in progress. Insecure or hazardous anchors must be corrected immediately.

(11) Artificial earth anchors must be installed and used according to their design specifications and manufacturer's recommendations.

(12) Mobile equipment may be used to anchor skylines, running lines and guylines, provided the weight of the machine or other methods are used to ensure machine stability for all applied loads.

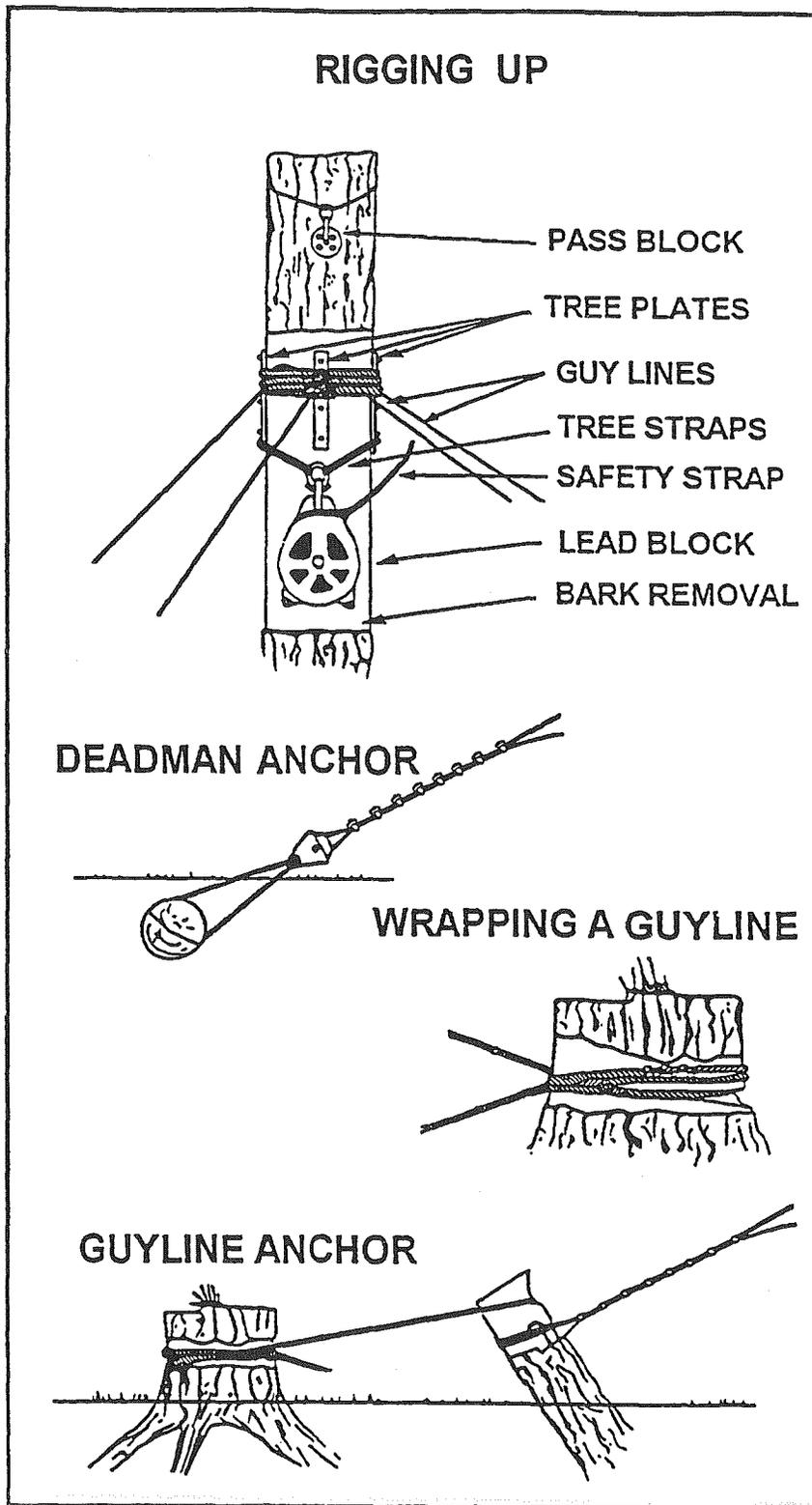


Figure 24: Rigging Illustrations

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-569, filed 8/18/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-54-569, filed 4/10/90, effective 5/25/90. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-569, filed 9/21/79.]

WAC 296-54-571 Releasing spiked guylines and spiked skylines from anchors. The following procedures must be followed when removing spiked guylines or spiked skylines from stumps:

- (1) Reversed safety wrap is put on and secured before loosening the last wrap;
- (2) An authorized employee is in charge of loosening guylines or skylines;
- (3) The authorized employee uses all precautions and gives warning before releasing lines; and
- (4) Safety holdbacks are used when necessary for employee safety.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-571, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240, 79-10-081 (Order 79-14), § 296-54-571, filed 9/21/79.]

WAC 296-54-573 Logging machines—General. (1) All logging machinery must have speed limiting devices, safety stops, or emergency shut down devices or shut off valves, with the controls located so that in the event of an emergency, the prime mover may be shut down from a safe place.

(2) Machine operators must be experienced in operating the equipment they use.

EXCEPTION: Inexperienced employees may operate equipment to gain experience while in training but may do so only while working under the immediate supervision of an experienced authorized person.

(3) All machine controls must be marked as to their purpose in the operation of the machine.

(4) The rated capacity of any vehicle transporting a machine must not be exceeded.

(5) Machines must be loaded, secured, and unloaded in a manner that will not create a hazard for any employee.

Note: This requirement includes the loading, securing and unloading of a machine on and off a transport vehicle.

(6) The employer must not make any modifications or additions that affect the capacity or safe operation of the equipment without written approval of the manufacturer or a qualified engineer. If modifications or changes are made, the capacity, operation and maintenance instruction plates, tags, or decals, must be changed accordingly. The original safety factor of the equipment must never be reduced.

(7) Equipment must be classed and used according to the manufacturer's rating. Where low gear ratios or other devices are installed to increase the line pull in accordance with subsection (6) of this section, the size of the rigging must be increased accordingly so that it will safely withstand the increased strains.

(8) Each machine, including any machine provided by an employee, must be maintained in serviceable condition and the following:

(a) Each machine must be inspected before initial use during each workshift. Defects or damage must be repaired or the unserviceable machine is replaced before beginning work.

(b) Operating and maintenance instructions must be available on the machine or in the area where the machine is being operated. Each machine operator and maintenance

employee must comply with the operating and maintenance instructions.

(c) Each machine must be operated only from the operator's station or as otherwise recommended by the manufacturer.

(d) Employees must not be allowed to ride on any load.

(9) The yarding machine or vehicle, including its load, must be operated with safe clearance from all obstructions.

(10) While manual/mechanized falling is in progress, all logging machines must be operated at least two tree lengths away from trees being fell.

EXCEPTION: This provision does not apply to logging machines performing tree pulling operations or logging machines called upon by the cutter to ground hazard trees. All cutters must be notified of the logging machine entrance into the area and all falling within two tree lengths of the logging machine must stop.

(11) If a hydraulic or pneumatic storage device can move the moving elements such as, but not limited to, blades, buckets, saws and shears, after the machine is shut down, the pressure or stored energy from the element must be discharged as specified by the manufacturer.

(12) Loads must not exceed the rated capacity of the pallet, trailer, or other carrier.

(13) Boom-type logging machines must have a boom stop to prevent over-topping of the boom.

(14) Boom points of timber booms must be equipped with metal straps, plates, or other devices as needed to properly secure eyebolts and fittings used to support lines, blocks, or other rigging.

(15) Logging machine sleds or bases must be strong enough to withstand any stresses imposed upon them.

(16) Stationary logging machines must be securely anchored or otherwise stabilized to prevent unintended movement while yarding or skidding.

(17) Logging machines and their components must be securely anchored to their bases.

(18) Logging machines must be kept free of flammable waste materials and any materials that might contribute to slipping, tripping or falling.

(19) A safe and adequate means of access and egress to all parts of logging machinery where persons must go must be provided and maintained in a safe and uncluttered condition. Machine access systems, meeting the specifications of the Society of Automotive Engineers, SAE J185, June 1988, "Recommended Practice for Access Systems for Off-Road Machines," must be provided for each machine where the operator or any other employee must climb onto the machine to enter the cab or to perform maintenance. Walking and working surfaces of each machine and machine work station must have a slip-resistant surface to assure safe footing.

(20) Enclosed-type cabs installed on mobile logging machines must have two means of exit. One may be an emergency exit and be available for use at all times regardless of the position of the side arms or other movable parts of the machine. An easily removable window is acceptable as the emergency exit if it is large enough for an employee to readily exit.

EXCEPTION: Mobile logging machines manufactured before July 1, 1980 are not required to have two means of exit.

(21) Before leaving the operator's station of a machine, the operator must ensure the machine is secured as follows:

- (a) The parking brake or brake locks must be applied;
- (b) The transmission must be placed in the manufacturer's specified park position; and
- (c) Each moving element such as, but not limited to, blades, buckets, saws and shears, must be lowered to the ground or otherwise secured.

(22) Storing employee property, tools, or other miscellaneous materials on or within three feet of any logging machine is prohibited if retrieving the items would expose an employee to the hazardous pinch point area between the rotating superstructure and the nonrotating undercarriage.

(23) Employees must approach the hazardous pinch point area only after informing the operator of that intent and receiving acknowledgment from the operator that the operator understands the employee's intention. All logging machines must be stopped while any employee is in the hazardous pinch point area.

(24) After adjustments or repairs are made, logging machines must not be operated until all guards are reinstalled, safety devices reactivated, and maintenance equipment removed.

(25) Fairleads must be properly aligned at all times and designed to prevent line damage.

(26) Employee(s), except a mechanic or employee in training to operate equipment, must not ride on any mobile logging machine unless provided with seating, seat belts, and other protection equivalent to that provided for the operator.

(27) Riding on arches, reaches or turn of logs is prohibited.

(28) Tractors, skidders, arches, or logs being yarded by them must not run over or rub against anchored lines, tailhold stumps, or other rigging.

(29) Ends of lines attached to drums on logging machines must be secured by end attachments that develop the ultimate strength of the line unless three wraps of line are maintained on the drum at all times.

EXCEPTION: This does not apply to tractors or skidders.

(30) Wire rope must be wound on drum spools in a manner to prevent excessive wear, kinking, chafing or fouling.

(31) Guylines required in rigging spars or towers must be evenly spooled to prevent fouling.

(32) A guide pulley, tool, stick, iron bar or other mechanical or manual means must be used when guiding lines onto drums. Guiding lines onto drums with any part of the body in direct contact with the line is prohibited.

(33) A limit switch must be installed on electric-powered log loaders to prevent the lift arms from traveling too far in the event the control switch is not released in time.

(34) All forklift type log handling machines must be equipped with a grapple system and the arms must be closed whenever logs are being carried.

(35) When forklift machines are used to load, unload, or handle trailers, a positive means of holding the lifting attachment on the fork must be installed and used.

(36) Loads on forklift type log handling machines must be transported as low as safely operable without obstructing visibility.

(37) Guyline drum controls and outrigger controls must be separated and clearly identified in a manner that will prevent the engaging of the wrong control.

(38) Each machine must be equipped with guarding to protect employees from exposed moving elements, such as, but not limited to, shafts, belts, pulleys on chains, sprockets and gears in accordance with the requirements of this standard and chapter 296-24 WAC, Part C, Machinery and machine guarding. Guards must be in place at all times when machines are in use.

Note: This does not apply to lifting or yarding components such as, but not limited to, cable nip points, sheaves and blocks.

(39) Each machine used for debarking, limbing, and chipping must be guarded to protect employees from flying wood chunks, logs, chips, bark, limbs, and other material in accordance with the requirements of this standard and chapter 296-24 WAC, Part C, Machinery and machine guarding.

(40) Grab rails must be provided and maintained in good repair on all walkways of stationary units elevated more than four feet.

(41) Towed equipment such as, but not limited to, skid pans, pallets, arches, and trailers, must be attached to each machine or vehicle to allow a full ninety degree turn; to prevent overrunning of the towing machine or vehicles; and to ensure that the operator is always in control of the towed equipment.

(42) Timbers used for masts or booms shall be straight-grained, solid, and capable of withstanding the working load.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-573, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-573, filed 9/21/79.]

WAC 296-54-57310 Logging machines—Chipping in woods locations. In-woods chipping must be performed according to the following:

(1) Chipper access covers or doors remain closed until the drum or disc stops completely.

(2) Infeed and discharge ports are guarded to prevent contact with the disc, knives, or blower blades.

(3) The chipper is shut down and locked out according to the lockout/tagout requirements of chapter 296-24 WAC, Part A-4, when an employee performs any servicing or maintenance.

(4) Detached trailer chippers are chocked when used on any slope where rolling or sliding of the chipper is reasonably foreseeable.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57310, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57315 Logging machines—Exhaust pipes. (1) Engines not equipped with turbochargers must be equipped with spark arrestors in compliance with the department of natural resources, chapter 332-24 WAC, requirements for spark-emitting equipment.

(2) Each machine muffler provided by the manufacturer, or their equivalent, must be in place at all times the machine is in operation.

(3) Exhaust pipes must be located or insulated to protect workers from accidental contact with the pipes or muffler and must direct exhaust gases away from the operator and other persons.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57315, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57320 Logging machines—Glass. Glass installed on logging machines must:

(1) Be free of deposits of oil and mud or defects that could endanger the operator or other employees;

(2) Be safety glass or a type that provides equal protection;

(3) Be removed or replaced if defective or broken glass impairs the vision of the operator; and

(4) Have an additional metal screen or guard installed where glass does not provide adequate operator protection from flying chokers, chunks, saplings, limbs, etc. The operator's vision must not be impaired.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57320, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57325 Logging machines—Brakes. (1) Brakes or dogs must be installed on all machine drums and maintained in effective working condition.

(2) Drum brakes must have an independent locking device that will hold the drum when the operator leaves the machine and the machine is not operating.

(3) Brakes must be protected from direct exposure to the elements or be designed or constructed to make them impervious to such exposure.

(4) At the start of each shift, logging machine operators must test all brakes before taking a load.

(5) Service brakes must be able to stop and hold each machine and its rated load capacity on the slopes over which it is being operated. Brakes must be effective whether or not the engine is running and regardless of the direction of travel.

(6) Self-propelled logging machines manufactured on or after July 1, 1985, must be equipped with braking systems as follows:

(a) A service braking system, which must be the primary means of stopping and holding the equipment;

(b) An emergency stopping system, which must be a secondary means of stopping the equipment in the event of any single failure of the service system; and

(c) A parking brake system, which must be used to continuously hold a stopped machine stationary within the limits of traction on any grade on which it is operated so as to allow the operator to leave the vehicle without the vehicle moving, and to prevent subsequent movement of the vehicle while unattended. The parking brake system must maintain this parking performance despite any contraction of brake parts, failure of the source of application, energy or leakage of any kind.

(7) The braking systems required in subsection (5) of this section must be installed, tested, and maintained according to the following Society of Automotive Engineers' (SAE) Recommended Practices:

(a) J1026-1982—Braking Performance—In Service Crawler Tractors and Crawler Loaders;

(b) J1473-1984—Braking Performance—Rubber-Tired Construction Machines;

(c) J1178-1980—Minimum Performance Criteria for Braking Systems for Rubber-Tired Skidders.

(8) Self-propelled logging machines manufactured before July 1, 1985, must have braking systems installed, tested and maintained in as effective a condition as originally intended by the manufacturer.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57325, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57330 Logging machines—Outriggers.

(1) All outriggers must have a stable base under the outrigger or equivalent leveling pads as recommended by the equipment manufacturer.

(2) Outriggers must have a means to hold them in both the retracted and extended position.

(3) Hydraulic outriggers must have a positive holding device (velocity fuse, load check valve, manually operated valve or equivalent) to prevent movement of the piston in the event of a hose, fitting or other failure in the hydraulic system except when proper blocking is provided.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57330, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57335 Logging machines—Hydraulics.

(1) If failure of hydraulic lines could create a hazard to an equipment operator while at the operator's station, safeguards must be installed that will eliminate the hazard.

(2) Machines or equipment must not be operated when hydraulic fluid leakage creates contamination of the operator's workstation, means of access or egress, or creates other unsafe conditions such as fire hazard or control malfunction.

(3) Abrasive contact with hydraulic hoses, tubing or fittings must be eliminated before further use.

(4) Defective hydraulic hoses, lines and fittings must be replaced.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57335, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57340 Logging machines—A-frames.

(1) A-frames must be guyed or braced to provide stability and prevent tipping.

(2) A-frame bases must be secured against displacement and the tops must be securely bolted or lashed to prevent displacement.

(3) Where guylines are used, A-frames must have at least one snap guy and two guylines securely attached, anchored and spread to form an angle 70 degrees to 90 degrees opposite the direction of stress or strain.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57340, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57345 Logging machines—Moving. (1) Operators must ensure that all employees are in the clear before initiating or continuing the movement of any mobile equipment. The machine must be operated far enough from employees and other machines so that operation does not create a hazard for an employee.

(2) At any time when moving logging machines, the driver must have a clear and unobstructed view of the direction of travel. When this is not possible, a signal person with a clear and unobstructed view of the direction of travel must be designated and used to direct the movement of the machine, or the machine must have an audible horn that is sounded.

EXCEPTION: This does not apply to tractors, skidders or tree harvesters during normal yarding operations.

(3) Where a signalperson is used, the equipment operator must move the equipment only on signal from the designated signalperson and only when the signal is distinct and clearly understood.

(4) When moving power units, persons other than the operator and the person in charge must not be permitted to ride on the unit.

(5) All obstructions that may reach the operator while moving a machine must be removed.

(6) When moving to areas within the immediate landing area, all employees must stay in the clear of the logging machine(s) or must inform the operator of the intent to approach or be near the machine(s).

(7) Mobile yarders and wheel or crawler loaders must not travel on road grades greater than 15 percent unless they are securely snubbed or towed, or have a braking system designed for such travel by the manufacturer.

(8) Crawler-type, track-mounted logging machines with manual transmissions must be equipped with a ratchet or other device that will prevent unintended disengagement or reversing of the machine and the operator must be informed of the proper technique.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57345, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57350 Logging machines—Tractors and skidders. (1) Operators must operate and control their machines in a safe manner and avoid operations in areas where machine stability may not be maintained.

(2) Winch lines on logging tractors or skidders must be attached to the drums with a breakaway device.

(3) Arches must be equipped with line guards.

(4) A turnaround, if needed for skidders, must be provided on all skidding roads every 500 feet.

(5) The following safe work procedures must be followed:

(a) Lines must not be allowed to trail behind the tractor or skidder where it may hang up and snap forward.

(b) Each machine must be positioned during winching so the machine and winch are operated within their design limits.

(c) Logs/trees must be chocked near the ends of the logs/trees whenever possible and safely positioned before traveling.

(d) Before climbing or descending grades, the proper gear must be selected to allow the engine to govern the tractor speed.

(e) On side hills, abrupt turns uphill must be avoided. The tractor or skidder must be backed downhill first then

turned uphill. The turn may be slacked off as necessary to permit this maneuver.

(f) Tractor or skidder speed must be adjusted to the circumstances prevailing. Excessive or uncontrolled speed must be avoided.

(6) Where tractor and skidder operators or helpers, because of the nature of their work duties, are required to wear calk soled footwear, the decks and operating foot controls must be covered with a suitable nonslip material.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57350, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57355 Logging machines—Protective structures for operators. (1) Each tractor, skidder, log stacker and mechanical felling device, such as tree shears or feller-buncher, placed into initial service after February 9, 1995, must be equipped with falling object protective structure (FOPS) and/or rollover protective structure (ROPS). The employer must replace FOPS or ROPS which have been removed from any machine.

EXCEPTION: This requirement does not apply to machines which are capable of 360 degree rotation.

(2) ROPS must be installed, tested, and maintained in accordance with the Society of Automotive Engineers SAE J1040, April 1988, "Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines."

(3) The ROPS must be high enough and wide enough so that it will not impair the movements of the operator or prevent his immediate escape from the vehicle in emergencies and must allow as much visibility as possible. Clearance above the deck and the ROPS of the vehicle at exits must be at least fifty-two inches (1.3 meters).

(4) Certified roll-over protective systems must be identified by a metal tag permanently attached to the ROPS in a position where it may be easily read from the ground. The tag must be permanently and clearly stamped, etched or embossed indicating the name and address of the certifying manufacturer or registered professional engineer, the ROPS model number (if any) and the vehicle make, model or serial number the ROPS is designed to fit.

(5) Roll-over protective structure systems must be maintained in a manner that will preserve their original strength. Welding must be performed by qualified welders only. (A qualified welder is defined under "welder qualification" in American Welding Society A.W.S. A3.0-69.)

(6) FOPS structures must be installed, tested and maintained according to:

(a) The society of automotive engineers SAE J231-1971, "minimum performance criteria for falling object protective structures (FOPS) prior to February 9, 1995."

(b) Society of automotive engineers SAE J231, January 1981, "minimum performance criteria for falling object protective structures (FOPS) for each tractor, skidder, log stacker, log loader and mechanical felling device, such as tree shears or feller-buncher, placed into initial service after February 9, 1995."

(7) The employer must replace FOPS that have been removed from any machine.

(8) Vehicles with ROPS or FOPS as required in subsection (1) of this section, must comply with the society of automotive engineers SAE J397a-1972, "deflection limiting volume for laboratory evaluation of roll-over protective structures (ROPS) and falling object protective structures (FOPS) of construction and industrial vehicles." Vehicles placed into initial service after February 9, 1995, must meet the requirements of SAE J397-1988.

(9) The opening in the rear of the ROPS on the crawler or rubber-tired tractors (skidders) must be covered with 1/4-inch diameter woven wire having not less than 1-1/2-inches or more than 2-inch mesh, or material which will afford equivalent protection for the operator.

(a) The covering must be attached to the structural members so that enough clearance is provided between the screen and the back of the operator.

(b) Structural members must be free from projections that would tend to puncture or tear flesh or clothing.

(c) Suitable safeguards or barricades must be installed, in addition to the screen, to protect the operator when there is a possibility of being struck by any material that could enter from the rear.

(10) Crawler and rubber-tired tractors (skidders) working in areas where limbs or brush may endanger the operator must be guarded.

(a) Shear or deflector guards must be installed on each side of the vehicle at an angle leading forward and down from the top front edge of the canopy of the vehicle, which will tend to slide the brush or limbs up and over the top of the canopy.

(b) Open mesh material with openings of a size that will reject the entrance of an object larger than 1-3/4-inches in diameter, must be extended forward as far as possible from the rear corners of the cab sides to give the maximum protection against obstacles, branches, etc., entering the cab area.

(c) Deflectors must also be installed ahead of the operator to deflect whipping saplings and branches.

(d) Deflectors must be located so as not to impede entrance to or exit from the compartment area.

(e) The floor and lower portion of the cab must be completely enclosed with solid material, except at entrances, to prevent the operator from being injured by obstacles which otherwise could enter the cab compartment.

(11) Enclosures for agricultural and industrial tractors manufactured after September 1, 1972, must be constructed, designed and installed as detailed in the society of automotive engineers technical report J168. Each machine manufactured after August 1, 1996, must have a cab that is fully enclosed with mesh material with openings no greater than 2 inches (5.08 cm) at its least dimension. The cab may be enclosed with other material(s) where the employer demonstrates such material(s) provides equivalent protection and visibility.

EXCEPTION: Equivalent visibility is not required for the lower portion of the cab where there are control panels or similar obstructions in the cab, or where visibility is not necessary for safe operation of the machine.

(12) Overhead protection and other barriers must be installed to protect the operator from lines, limbs, and other moving materials on or over all loading or skidding machines

and on all yarding machines where the operator's station is mounted on board. The overhead covering of each cab must be of solid material and extend over the entire canopy. A skylight in a logging machine must be made of safety glass or provide equivalent protection.

Note: This does not apply to self-loaders.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57355, filed 8/18/99, effective 12/1/99.]

WAC 296-54-575 Landing area. (1) Unless otherwise specified, landing areas must:

(a) Be large enough that if logs are to be heeled and swung, they will not strike standing timber, rigging, or other equipment or objects;

(b) Be large and level enough to land and deck the logs in the turns so that they will not slide or roll in the direction of employees or equipment. This is not intended to restrict the yarding and/or loading of logs for pole piling or an infrequent long break or tree length, provided the log is secured before unhooking the choker;

(c) Be large enough for safe movement of all logs and machinery;

(d) Landings must be free of root wads, limbs, tops, etc., that constitute a safety hazard; and

(e) Not have materials pushed, thrown, or dumped over the edge in a manner or at a time that will endanger employees.

(2) When during roadside thinning, logs stacked on the roadside without a landing must be placed in a stable condition.

(3) During uphill yarding, the landing chute must be cleared of logs before the next turn of logs is landed unless:

(a) The logs are fully contained in the landing chute; or

(b) There is no possibility that employees working below the landing may be struck by rolling objects coming off the landing.

(4) Roadside or continuous landings must be large and wide enough to safely operate and maintain the yarding or loading equipment. Outrigger pads, tracks or wheels must be on firm, stable ground.

(5) In logging operations where the yarder is set up in the haul road and logs are landed on the slope below the road, the following must apply:

(a) If the landing chute slope is twenty percent or less, logs may be landed and decked in the chute provided the logs can be left in a stable position;

(b) If the landing chute slope exceeds twenty percent, decking is not permitted in the chute if a chaser is required to unhook the rigging from the logs or if employees are working below the landing chute and are exposed to rolling or sliding logs;

(c) If logs are to be decked below the road, the logs must be effectively secured from rolling or sliding down the hill; or

(d) If the landing process or weather conditions (rain, snow, ice, mud) prevent the required log stability and exposes employees to the hazard of rolling or sliding logs, the logs must be decked at a different location.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-575, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-575,

filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-575, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-575, filed 9/21/79.]

WAC 296-54-577 Yarding, skidding, landing. (1)

Running lines must be arranged so that employees are not required to work in the bight of the line. When employees must work in the bight, employees must move out of the bight of the lines before the signal to move the turn is given, or be in a position where they are protected by standing timber, terrain, or other objects large enough to ensure their safety.

(2) Choker holes must be dug from the uphill side of the log when there is danger of the log rolling or moving.

(3) Chokers must be placed near the end of the log/tree whenever possible.

EXCEPTION: When long logs or tree-length logs are being yarded and a long end is necessary to safely land the logs/trees on the available landing space.

(4) Employees must be in the clear of logs, root wads, chunks, hazardous trees, rolling material and rigging before the go-ahead signal is given and must stay in the clear until all rigging movement has stopped.

(5) Employees must move away from the turn so as to be above or behind the turn and in the clear. They must remain on their feet and face the turn before the go-ahead signal is given.

(6) All employees must remain away from rigging that is stopped at a hangup, until the rigging has been slacked to reduce the hazard.

(7) Chokers must not be hooked or unhooked until all rigging is stopped completely.

(8) Logs must not be landed until all employees, trucks or equipment are in the clear.

(9) Logs must not accumulate in the landing chute to the point where they become a hazard to the landing personnel.

(10) Logs must be stable and secure before being approached by employees and before chokers are unhooked.

(11) An employee must not buck, limb or trim logs from a position that will expose the employee to contact with moving lines.

(12) Logs must not be placed in, moved about, or removed from the bucking area of the landing unless all employees are in the clear.

(13) An unimpaired horizontal clearance of at least three feet must be maintained between the rotating superstructure of any logging machine working on a landing and any adjacent object or surface. If this clearance cannot be maintained, a safety zone barrier must be used to isolate the hazardous area. The safety zone barrier may be a warning line constructed of rope or ribbon, supported on stanchions.

(14) "DANGER 36-INCH CLEARANCE" must be marked near the rear of the machine.

(15) Employees must not approach a machine's working circle until the operator has acknowledged that it is safe to do so.

(16) Whenever possible, chokers must be set from the uphill side of a log. Persons must not be on the lower side of a log which appears to be unstable or likely to roll.

(17) When yarding during the hours of darkness, the area must be lighted enough to allow employees to safely perform their duties. The source of light must be located and directed to create minimum shadows and glare. If using a portable tailhold, lights must be directed on equipment to allow the person to visually determine that the tailhold equipment remains stabilized.

(18) Each yarded tree/log must be placed in a location that does not create a hazard for an employee and in an orderly manner so that the trees/logs are stable before bucking or limbing is commenced.

(19) When using a yarder, loader or skidding machine, the location of the machine or position of the yarder must be such that the operator will not be endangered by incoming logs or debris.

(20) Employee(s) must be assigned to flag on roads or provide other equivalent protection where hazardous conditions are created from logging such as, but not limited to:

(a) Running wire rope lines or rigging across road grades, excluding guylines and standing skylines if lines remain a safe distance above the road to allow a vehicle to pass under; or

(b) The movement of logs, chunks, or debris across or suspended over road grades.

EXCEPTION: Where there is no through traffic, such as on a dead end road or where the property owner's permission or proper authority is granted to close a section of road, warning signs and barricades may be used instead of flagger(s).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-577, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-577, filed 9/21/79.]

WAC 296-54-579 Log decks. (1) Logs must be placed in and removed from decks in a straight and orderly manner so as to minimize the hazards from rolling or shifting logs.

(2) If employees are working on the ground near the deck, the deck must be constructed and located so it is stable and provides each employee with enough room to safely move and work in the area.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-579, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-579, filed 9/21/79.]

WAC 296-54-581 Helicopter logging—General. (1)

Prior to daily logging operations, a briefing must be conducted. The briefing must set forth the plan of operation for the pilot(s) and ground personnel. Anytime a change in operating procedure is necessary, affected personnel must be notified.

(2) Employees and equipment must remain in the clear and employees must never be under a suspended load.

(3) Employees must not work under hovering craft except for that limited period of time necessary to guide, secure, hook/unhook loads, and perform maintenance/inspections or other related job duties.

(4) The location of the drop zone, decking areas, loading areas, and designated safety zones must be established by a pilot and a responsible supervisor taking into consideration current operating conditions.

(5) Personal protective equipment.

(a) Employees must wear high visibility hard hats secured by a chinstrap.

(b) Employees hooking and receiving the load must wear high visibility vests or outer garments.

(6) Whenever approaching or leaving a support helicopter with blades rotating, employees must:

(a) Remain in full view of the pilot and keep in a crouched position;

(b) Obtain a visual or audible acknowledgment from the pilot before entering or exiting the helicopter;

(c) Avoid the area from the cockpit or cabin rearward unless authorized by the helicopter company to work there; and

(d) Exercise special caution to keep clear of rotors when visibility is reduced.

(7) Before approaching or departing the service area for maintenance, visual and/or audible communication must be established.

(8) There must be reliable communication available between the helicopter, woods crew, landing, and service areas. In the absence of radio communication there must be a designated signal person.

(9) Developed hand signals must be clearly communicated and understood by all persons working in the area who may be affected by their use.

(10) Riding the load or hook of a helicopter is prohibited except in an emergency.

(11) Unauthorized employees must not be allowed to approach within fifty feet of the helicopter when the rotor blades are turning.

(12) Every practical precaution must be taken to provide for the protection of employees from flying objects in the rotor downwash.

(13) Loads must be properly slung. Tag lines used by ground personnel to position loads must be of a length that will not permit their being drawn up into rotors. Pressed sleeve, swaged eyes, or equivalent means must be used for all freely suspended loads to prevent hand splices from spinning open or cable clamps from loosening.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-581, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-581, filed 9/21/79.]

WAC 296-54-58110 Helicopter logging—Landing.

(1) The landing drop zone must be large enough for the longest logs to be landed without endangering the landing crew.

(2) Landing crew must remain in the clear until the load is placed flat on the ground and chokers are released from the hook.

(3) Landings must be constructed with minimal slope for drainage in the drop zone and a decking area to prevent logs from rolling.

(4) The approach to the landing must be kept clear and long enough to prevent tree tops from being pulled into the landing.

(5) Landing personnel must be notified when chokers are being picked up.

(6) If the load will not release from the hook, the hook must be on the ground or at eye level, whichever is safer, before employees approach to release the hook manually.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58110, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58120 Helicopter logging—Yarding.

(1) Helicopters must not work in areas near enough to cutters to cause the rotor wash to affect a cutter's ability to safely control a tree or to cause dislodging of limbs.

(2) The yarding helicopter must be equipped with a siren to warn employees of any hazardous situation.

(3) Log pickup must be arranged so that the hookup crew will not work on slopes below fell and bucked timber that appears unstable and likely to roll.

(4) If the load must be lightened by the hooker, the hooker must remain on the uphill side of the load and slack given to the entire load before releasing the hook.

(5) If the load must be aborted or lightened by the pilot, the hooker must be in the clear before releasing the hook.

(6) Employees must remain in the clear as chokers are being delivered. Under no circumstances can employees move under the chokers being delivered or take hold of the chokers before they are placed on the ground.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58120, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58130 Helicopter logging—Fueling

area. (1) Separate areas must be designated for landing logs and for fueling helicopter(s).

(2) Refueling any helicopter with either aviation gasoline or Jet B (turbine) type fuel while the engine is running is prohibited.

(3) Helicopters using Jet A (turbine-kerosene) type fuel may be refueled with engines running provided the following criteria are met:

(a) Unauthorized employees must not be allowed within fifty feet of the refueling operation or fueling equipment; and

(b) Fire extinguishers must be strategically located in the fueling area and must have a combined rating of at least 20A:120BC.

(4) All fueling employees must be thoroughly trained in the refueling operation and in the use of the available fire extinguishing equipment they may be expected to use.

(5) The following are prohibited within fifty feet of the fueling area or fueling equipment:

- Smoking;
- Open flames;
- Exposed flame heaters;
- Flare pots; and
- Open flame lights.

EXCEPTION: Aircraft preheaters are not prohibited. However, no fueling may be performed while the heaters are in operation.

(6) The fueling area must be posted with "no smoking" signs.

(7) Because there are many causes of static electricity, fueling employees must assume that it is present at all times. Before starting refueling operations, the fueling equipment and the helicopter must be bonded and the fueling nozzle

must be electrically bonded to the helicopter. Using conductive hose is not an acceptable method of bonding. All grounding and bonding connections must be electrically and mechanically firm to clean unpainted metal parts.

(8) To control spills, fuel must be pumped either by hand or power; pouring or gravity flow is prohibited. Self-closing nozzles or deadman controls must be used and must not be blocked open. Nozzles must not be dragged along the ground.

(9) In case of a spill, the fueling operation must be immediately stopped until the person in charge determines that it is safe to resume.

(10) Helicopters with their engines stopped while being refueled with aviation gasoline or Jet B (turbine) type fuel, must comply with subsection (4) through (9) of this section.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58130, filed 8/18/99, effective 12/1/99.]

WAC 296-54-583 Loading logs. (1) A positive means of communication must be established and used between the truck driver and the employee loading logs to control the movement of the log truck being loaded.

(2) Employees must not be permitted alongside or underneath trucks being loaded or on the load until communication has been established with the loading machine operator and the truck driver, and the employee is assured that it is safe to be there.

(3) Logs being moved or loaded must not pass over any employee or an occupied vehicle, equipment or truck cab.

(4) Standing between a truck cab and a log being loaded or unloaded is prohibited.

(5) Logs must not be lowered to the bunk while bunk or block adjustments are being made or until the employee making these adjustments is in the clear.

(6) Standing underneath a suspended trailer or its reach is prohibited.

(7) Loads must be built up or loaded in a manner to be stable without the use of wrappers. Wrappers are considered only as precautionary measures to ensure stability of the load.

(8) Where there is a danger of the grapple slipping off of logs, straps must be used in loading logs that are too large for the grapple or tongs and must be hung in both eyes.

(9) Logs must be loaded in a manner to prevent excessive strain on wrappers, binders, bunk stakes, bunk chains or straps.

(10) Logs in any tier or layer unsecured by stakes or cheese blocks must be well saddled and have their diameter centers inside the diameter centers of the outer logs of the next lower tier or layer.

(11) Bunk and wing logs must extend at least twelve inches beyond the front and rear bunks or stakes. When fixed bunks are used, logs must extend at least six inches beyond the front and rear bunk or stake.

(12) Double-ended logs above the stakes must not be loaded on the side of the load from which the binders or wrappers are intended to be released.

(13) Logs must be loaded so that no more than one-third of the weight of any log extends beyond the end of the logs or bunk supporting it.

(14) Logs must be loaded in a manner that will not impair full and free movement of the truck.

(15) Each log not contained within the stakes must be secured with at least two wrappers before the truck leaves the vicinity of the landing/loading area.

(16) All of the required wrappers must be placed on the load within sight of the landing/loading area so immediate emergency assistance can be given if necessary.

(17) Loads or logs must not be moved or shifted while binders are being applied or adjusted.

(18) The transport vehicle must be positioned to provide working clearance between the vehicle and the deck.

(19) All limbs or knots that would project beyond the stakes or legal height must be removed before the log is loaded on the car or truck.

Note: This does not apply to incidental limbs/knots placed on loads during the normal loading process.

(20) Power saws must not be operated on top of loaded logging trucks.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-583, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-583, filed 9/21/79.]

WAC 296-54-584 Tongs, hooks, grapples. (1) Tongs must be maintained in good condition, properly aligned and with sharp points.

(2) Tongs must not be carried by being rested on both shoulders with the tong points around the neck.

(3) When loading logs, straps of sufficient size and length must be used where there is a danger of tongs or hooks pulling out of the log.

(4) When loading logs, tongs may be used on large logs if the logs are barked and notched to ensure a secure hold.

(5) The closing line must be securely attached to the grapple according to the manufacturer's recommendations.

(6) Loading hooks and tongs must be securely attached on the loading line with screw shackles or equivalent devices.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-584, filed 8/18/99, effective 12/1/99.]

WAC 296-54-585 Cross-haul systems. (1) In cross-haul (parbuckle) or roll-on loading systems, the skid timbers must be strong enough to support the logs being loaded and long enough to remain in place while the log is being loaded.

(2) Loaders on cross-haul systems must work beyond the ends of the logs being loaded.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-585, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-585, filed 9/21/79.]

WAC 296-54-587 Self-loading log trucks. (1) A safe means of access and egress must be provided to the operator's loading work station.

(2) Self-loading log truck operators must not unload their own load unless a positive means of securing the logs is provided when binders and wrappers are removed.

(3) New self-loading log trucks purchased and put in operation after January 1, 1980, must be equipped with:

(a) A check valve installed on the jib boom; and

(b) A seat that is offset from the point of attachment of the boom. The seat and boom structure must rotate concurrently.

(4) The operator of a self-loading log truck must not heel the log over the operator's work station.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-587, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-587, filed 9/21/79.]

WAC 296-54-589 Log trucks—General. (1) Prior to use, the operator must make a complete daily inspection of the truck and trailer with particular attention to:

- Steering apparatus;
- Lights and reflectors;
- Brake boosters;
- Brake hoses and connections;
- Reaches;
- Hitches (couplings);
- Bunks;
- Stakes;
- Bunk blocks.

The brakes must be tested before and after movement of the vehicle. The operator must submit a written list of necessary repairs to a person designated by the employer.

(2) Any defective parts that would make the vehicle unsafe to operate, must be replaced or repaired before the vehicle is placed in service.

(3) Motor vehicles used on roads not under the control of the state department of transportation, counties, or cities must be equipped with accessories necessary for a safe operation including:

- (a) Operable head lamps;
- (b) At least two tail lamps and brake lamps that emit a red light plainly visible from a distance of one thousand feet to the rear; and
- (c) Two reflectors visible at night from three hundred fifty feet when directly in front of properly adjusted motor vehicle head lamps.

(4) The driver must do everything reasonably possible to keep the truck under control at all times and must not operate in excess of a speed at which the driver can stop the truck in one-half the visible distance.

(5) The area between the truck frame members, extending from the cab rearward as far as necessary to provide a safe work area, must be covered with suitable nonslip type material.

(6) Log trucks that have logs scaled at stations must have a platform on each side extending outward from the frame members at least eighteen inches, and must be eighteen inches long or as near to eighteen inches as the design of the truck permits. The treading surface of the platforms must be of nonslip material and the platform must be able to safely support a five hundred pound load.

(7) To protect the operator of vehicles from loads, there must be a substantial bulkhead behind the cab that extends up to the height of the cab.

(8) When at the dump or reload or where logs are scaled or branded on the truck, the logs must be scaled or branded before the binders are released.

(9) All vehicles, where vision of the operator in the direction of travel is impaired by the load or vehicle, must be moved only on a signal from a worker who has a clear view in the direction in which the vehicle is to be moved.

(10) Where a bridge or other roadway structure is posted with a load limit sign, log truck drivers or operators of other heavy equipment are prohibited from driving a load in excess of the posted limit over such a structure.

(11) All passengers must ride in the cab of the log truck.

(12) All trucks must keep to the right side of the road except where the road is plainly and adequately posted for left side travel.

(13) A method must be provided to ensure that the trailer will remain mounted on the truck while driving on highways or logging roads.

(14) When trucks are towed on any road, the person guiding the vehicle being towed must, by prearranged signals, govern the speed of travel. Vehicles must be towed at a reasonable speed and in a prudent manner. A tow cable or chain over fifteen feet in length must have a white flag attached at the approximate center, however, it is recommended that a rigid tow bar be used for this purpose.

(15) All rubber-tired motor vehicles must be equipped with fenders. Mud flaps may be used instead of fenders whenever the motor vehicle is not designed for fenders.

(16) All trucks must be equipped with doors with operable latches, or a safety bar or strap.

(17) Log trucks must not approach a landing while there is danger from incoming logs.

(18) While en route, the operator must check and tighten the wrappers/binders whenever there is reason to believe that the wrappers/binders have loosened or the load has shifted.

(19) Persons must not enter the area below a suspended load of logs.

(20) All trucks must be equipped with a means to protect the operator from inclement weather.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-589, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-589, filed 9/21/79.]

WAC 296-54-58910 Log trucks—Brakes. (1) Motor logging trucks and trailers must be equipped with brakes or other control methods that will safely stop and hold the maximum load on the maximum grade.

(2) All trucks with air brakes must be equipped with a readily visual or audible low air pressure warning device in good working order.

(3) An air loss rate out-of-service condition exists if an air leak is discovered and the reservoir pressure is not maintained when:

- (a) The governor is cut in;
- (b) Reservoir pressure is between 80 and 90 psi;
- (c) Engine is at idle; and
- (d) Service brakes are fully applied.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58910, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58920 Log trucks—Trailer hitches and safety chains. (1) All log truck and trailer combinations must be equipped with approved hitches (couplings) which must:

(a) Be capable of withstanding, in any direction, the potential stresses imposed;

(b) Be of a design which would not be rendered inoperative by dirt and debris and must be locked securely and positively; and

(c) Be attached to the truck frame or extension of the truck frame by means of not less than four machine bolts and nuts (120,000 psi material or better) inch diameter or larger, secured by lock nuts. Other means of attachment furnishing strength equal to or greater than the above may be accepted if of approved design and application.

(2) Hitches (couplings) or parts that are broken, cracked, excessively worn, or otherwise defective hitches must be repaired before use.

(3) Each log truck and trailer combination or log truck and independent trailer combination must be provided with two or more safety chains or cables with a rated breaking strength of at least the gross weight of the towed vehicle, and:

(a) Able to hold the trailer in line in case of failure of the hitch assembly;

(b) Permanently attached to the frame of the truck or an extension of the truck frame;

(c) Form a separate continuous connection between the truck frame or extension of the truck frame and the reach or trailer;

(d) Attached not more than twelve inches from the eye of the reach or trailer;

(e) Short enough to prevent the trailer reach or tongue from contacting the ground in the event of disengagement from the truck;

(f) Designed to provide a positive connection that cannot be made inoperative by any condition of use or exposure.

(4) Safety chains and cables must be replaced immediately if they contain cut, cracked, or excessively worn links, or frayed, stranded, or otherwise defective wire rope.

(5) Butt welding of safety chain links to reach truck frame, or extension of truck frame is prohibited.

(6) Repairs to safety chains, such as cold shuts, are prohibited.

(7) Frames must not be welded or drilled into if the manufacturer recommends against it.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58920, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58930 Log trucks—Reaches and bunks. (1) Log trailers must be connected to tractors by reaches of a size and strength to withstand all normal imposed stresses.

(2) Hand-holds or other facilities must be installed on trailer tongues or trailer reaches if workers are required to manually assist in coupling them to their tractors or trucks.

(3) The reaches of unloaded trailers being towed must have and use a minimum one-inch pin near the end or an equally effective means to prevent pulling or stripping through the tunnel.

(4) Reach locks, clamps, or tighteners must be of the type that will securely lock the reach in the tunnel.

(5) All reaches must be the maximum size usable in the tunnel of a trailer.

(6) Altering a trailer tunnel to permit reduction of reach size is prohibited.

(7) Every truck or truck and trailer engaged in transporting logs loaded lengthwise must be equipped with bunks and chock blocks or stakes.

(8) Log bunks or any part of a bunk assembly bent enough to cause bunks to bind, must be straightened. Bunks must be sharp enough to prevent logs from slipping.

(9) All trucks with swivel bunks must have bunk locks or an equivalent system of holding the bunks in place while loading logs.

(10) The bunks or bolsters of any truck or trailer must be either curved upward or straight. Bunks with ends lower than their centers are prohibited.

(11) Enough clearance must be maintained between the bunk and the bunk rider to prevent bunk binding.

(12) Trailer bunks must have a false or tilt bunk. The channel of the bunk must be kept reasonably free of debris.

(13) Stakes and stake extensions must be installed and maintained so that the angle between bunks and stakes (and extensions if used) do not exceed ninety degrees when loaded.

(14) Frames, bunks, and running gear of log trucks must be maintained free of cracks, breaks and defects. If defects are found, they must be immediately repaired or the part replaced.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58930, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58940 Log trucks—Stakes, stake extensions and chock blocks. (1) Trucks and trailers must be equipped with bunk stakes or chock blocks of strength and sized material to perform their intended function.

(2) All stakes, stake extensions, and bunks installed on log trucks and trailers, together with the means to secure and lock the stakes in hauling position, must be designed and constructed of materials of such size and dimension that will withstand operational stresses without yield or permanent set.

(3) Stake extensions made from axle shafts or other brittle material are prohibited.

(4) The linkage used to support the stakes or chocks must be of adequate size and strength to withstand the maximum imposed impact load. Molles or cold shuts are prohibited in chains or cables used for linkage.

(5) Stake chains or cables must be equal to or better than "high test" steel chain or "plow steel" wire rope, and of a size necessary to meet the requirements of a safe working load of at least six thousand six hundred pounds. (3/8-inch alloy chain, 7/16-inch high test chain of welded link construction, and 5/8 inch improved plow steel cable in 6x19 and 6x37 construction meet this requirement.)

(6) Bunk chains containing cut, cracked, excessively worn, or otherwise defective links, must be immediately removed from service. Molles, cold shuts (welded or otherwise), or bolts are not permitted in bunk chains.

(7) The use of frayed, stranded, or otherwise defective wire rope for chock block cable or stake straps is prohibited.

(8) Only chain links approved for welding (and properly welded) or approved repair links that will develop strength equivalent to the chain, are permissible for repairs or attachments to stake chains or binder chains.

(9) Chains or cables used to secure stakes or chock blocks must be secured in a way that does not require hammering directly on them to release the stakes or blocks. Key-hole slots and similar methods of securing chains are prohibited.

(10) Deformed or defective stakes, stake securing or stake locking devices, or bunks must be immediately repaired or removed from service.

(11) Each stake and chock used to trip loads must be constructed so that the tripping mechanism is activated on the side opposite the release of the load.

(12) Trip type stakes must be properly secured and locked in a manner that will prevent them from accidentally tripping or falling.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58940, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58950 Log trucks—Wrappers and binders. (1) On log trucks equipped with stakes, the following requirements must apply:

(a) In the hauling of a one log load, one wrapper chain or cable must be required and secured to the rear bunk. The log must be properly blocked or secured in a manner which will prevent it from rolling or shifting. An additional wrapper secured to the front bunk is optional.

(b) In the hauling of two log loads, not less than two wrapper chains or cables must be used to secure the load. The logs must be properly blocked to prevent them from rolling or shifting.

(c) On loads consisting of three or four logs not over forty-four feet in length, the load must be secured by not less than two properly spaced wrapper chains or cables. Ends of short logs not secured by such wrappers must be secured with extra wrappers. If any log is over forty-four feet in length, the load must be secured by not less than three properly spaced wrappers.

(d) Loads consisting of five or more logs, when the logs are all seventeen feet or less in length, must be secured by not less than two properly spaced wrappers. Loads consisting of five or more logs, when any log is over seventeen feet in length, must be secured by not less than three properly spaced wrappers.

(2) On log trucks equipped with chock blocks the following requirements must apply:

(a) In the hauling of a one log load, one wrapper chain or cable shall be required and secured to the rear bunk and the log must be properly blocked in a manner to prevent it from rolling or shifting.

(b) One additional wrapper chain or cable shall be required on log trucks using chock blocks over and above the requirements in subsection (1)(c) and (d) of this section.

(3) In the case of short logs loaded crosswise, the following method of securing the load must be used if the truck or trailer is not provided with solid ends of a height sufficient to prevent any log in the load from rolling off:

Not less than two chock blocks must be used at each open end of the vehicle and the load must be held with at least two wrapper chains or cables. The wrappers must be firmly attached to the end of the truck or trailer. Rigid standards or stakes may be used in lieu of chock blocks but each such standard or stake must be either rigidly connected to the bed of the truck or trailer or must be placed in a tight-fitting socket at least 12 inches in depth. Other means furnishing equivalent security may be acceptable.

(4) When two wrappers are required, they must be applied within six feet of the front and rear bunks. When more than two wrappers are required, the front and back binder must be applied within six feet of the front and rear bunks.

(5) To properly secure short logs, binders must be placed near the end, not less than twelve inches from the end of the log.

(6) Log(s) loaded on top or in outside saddles of a load must not be transported unless secured by at least two wrapper chains or cables, one of which must be placed near each end of such log.

(7) All wrappers and binders must be fastened in place prior to tightening to prevent the displacement of logs on the top of the load.

(8) All wrapper chains or cables, except in the case of one log load, must entirely surround the load. This does not apply to gut-wrappers.

(9) Gut-wrappers, when used, must be adjusted so as to be tightened by, but not carry the weight of the logs above them.

(10) A warning must be given before throwing wrappers over the load and care must be taken to avoid striking other persons with the wrapper.

(11) Each log not contained within the stakes must be secured with at least two wrappers before the truck leaves the vicinity of the landing/loading area.

(12) While moving logs, poles, or log chunks within sorting or mill yards, that could roll or slide off the truck due to snow or ice conditions, or the logs or log chunks do not extend beyond the stakes, at least two wrappers and binders must be used regardless of the height of the load.

(13) Wrapper chains or cables, binders, fasteners, or attachments thereof, used for any purpose as required by these standards must have a minimum breaking strength of not less than fifteen thousand pounds and must be rigged so that it can be safely released.

Note: 3/8-inch hi-test steel chain, 7/16-inch improved plow steel wire rope of 6x19 or 6x37 construction, or materials having equivalent strength, when in compliance with the requirements herein contained, will be acceptable. (The diameter of the wire rope is immaterial as long as it meets the minimum breaking strength requirements.)

Note: Nylon straps and ratchet binders having an equivalent breaking strength may be used when securing loads on (hay rack) log hauling systems.

(14) A loaded logging truck required to have wrappers by this section, may be moved within the loading area without wrappers only if such movement does not present a hazard to workers.

(15) For the purposes of this standard, applied bundle straps or banding are not acceptable as wrappers and binders.

(16) All loose ends of wrapper chains or cables must be securely fastened so as to prevent their swinging free in a manner that will create a hazard.

(17) Binders for securing wrappers on logging trucks must be fitted with hooks of proper size and design for the wrapper chain being used.

(18) Wrappers must be removed from service when any of the following conditions exist:

- (a) Excessively worn links on chains;
- (b) Deformed or stretched chain links;

- (c) Cracked chain links; or
- (d) Frayed, stranded, knotted, or otherwise defective wire rope.

(19) Pipe extension handles (swedes) for tightening or securing binders must be no longer than thirty-six inches. Care must be taken that a sufficient amount of the pipe extends over the binder handle.

(20) Defective binders must be immediately removed from service.

Note: See Figures 25 through 35 for illustrations of placement and number of wrappers.

PLACEMENT AND NUMBER OF WRAPPERS One Log Load

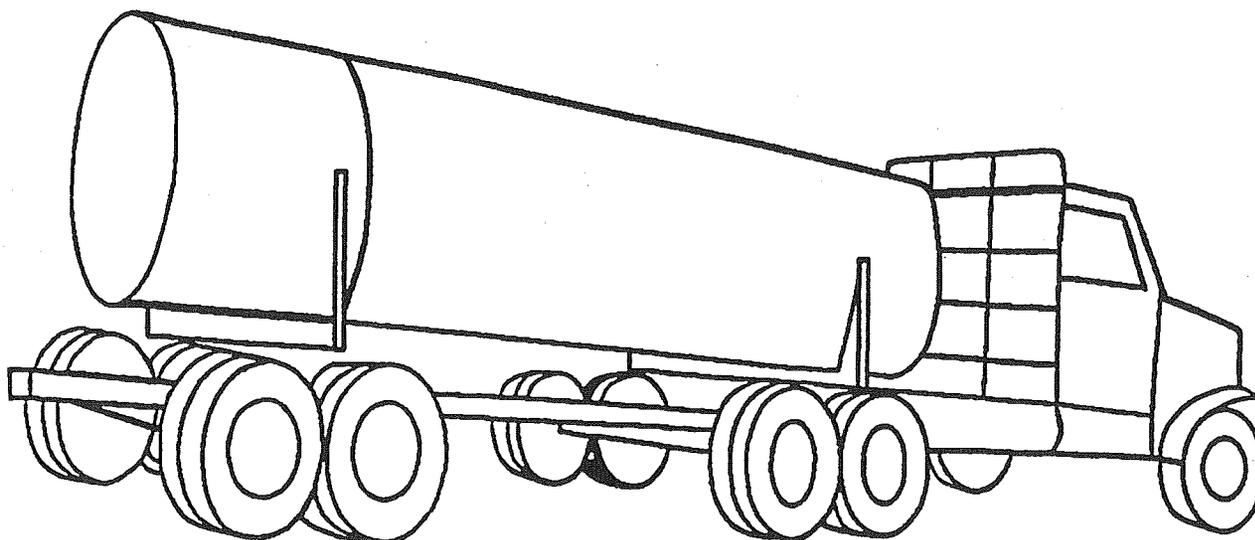


Figure 25: One Log Load

Two Log Load

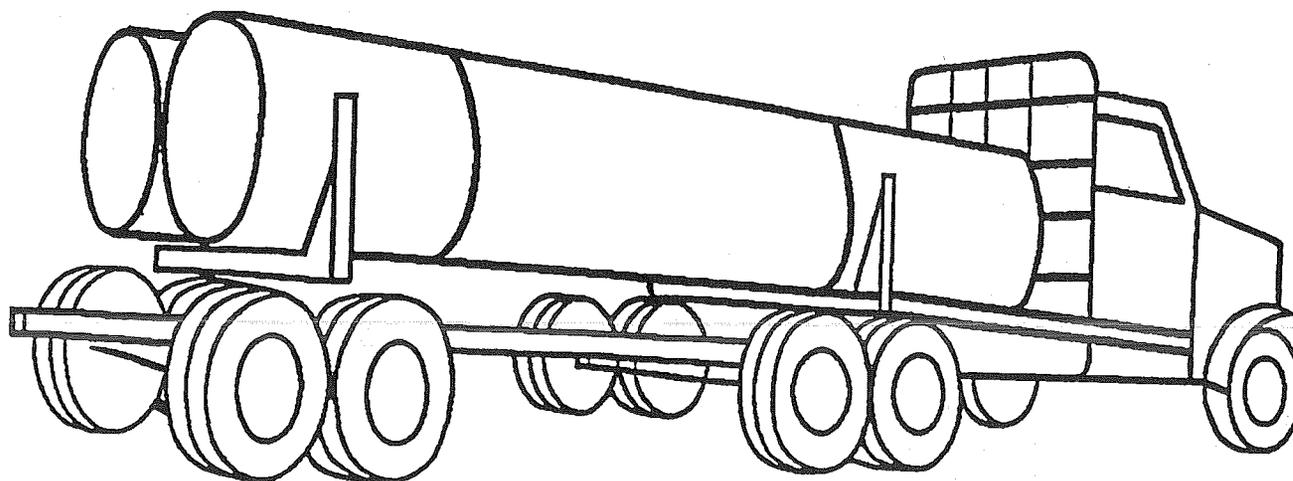


Figure 26: Two Log Load

Safety Standards—Logging Operations
Three or Four Log Load 44 Ft. or Less

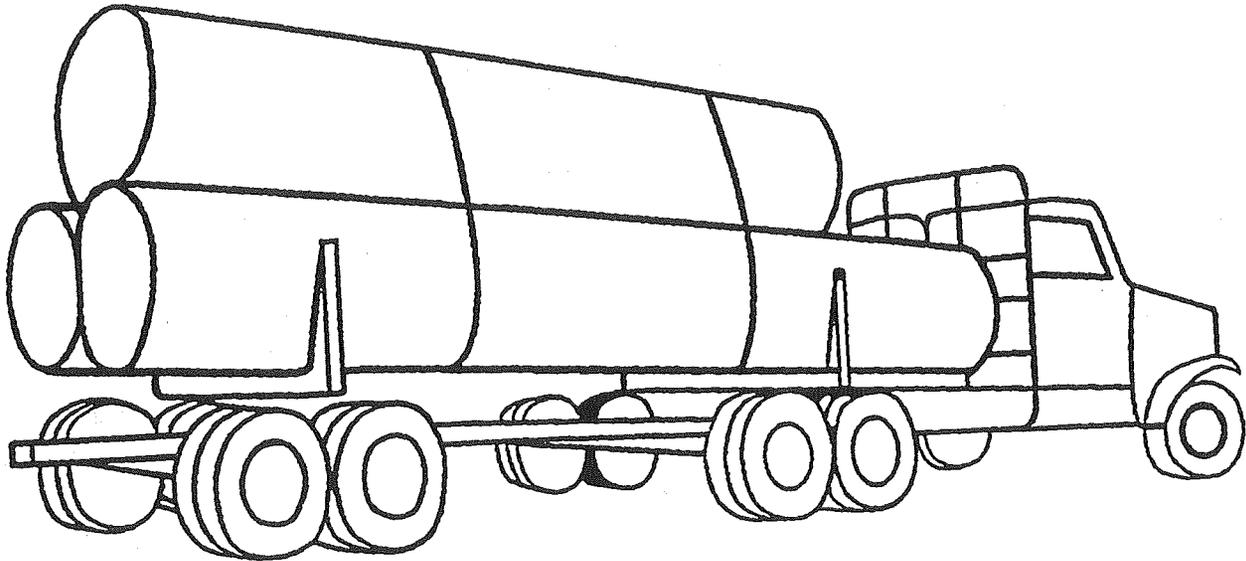


Figure 27: Three or Four Log Load 44 feet or less

Three or Four Log Loads More Than 44 Feet

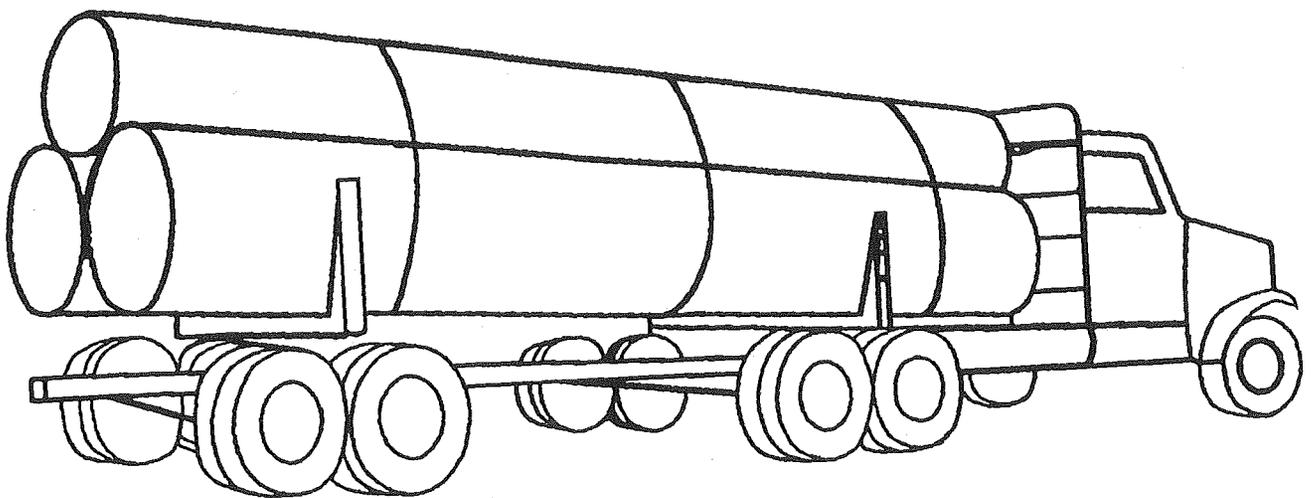


Figure 28: Three or Four Log Loads more than 44 feet

Five or Six Log Load All Logs 17 Feet or Less

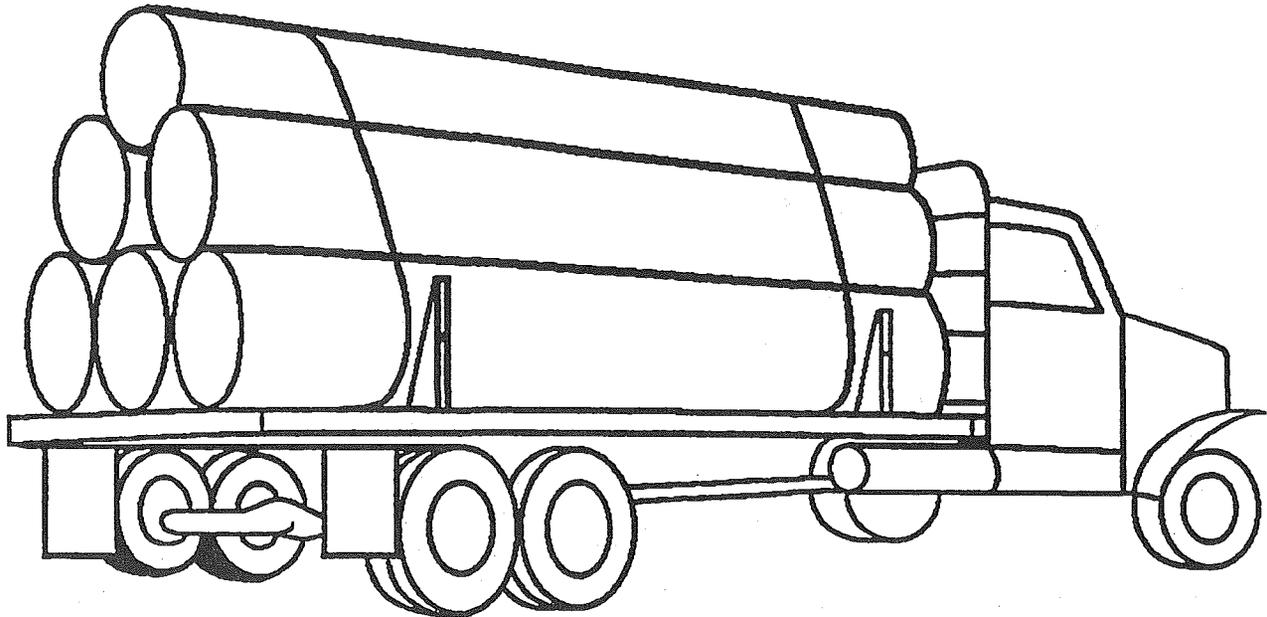


Figure 29: Five or Six Log Load All Logs 17 feet or less

Seven or More Log Load All Logs 17 Feet or Less

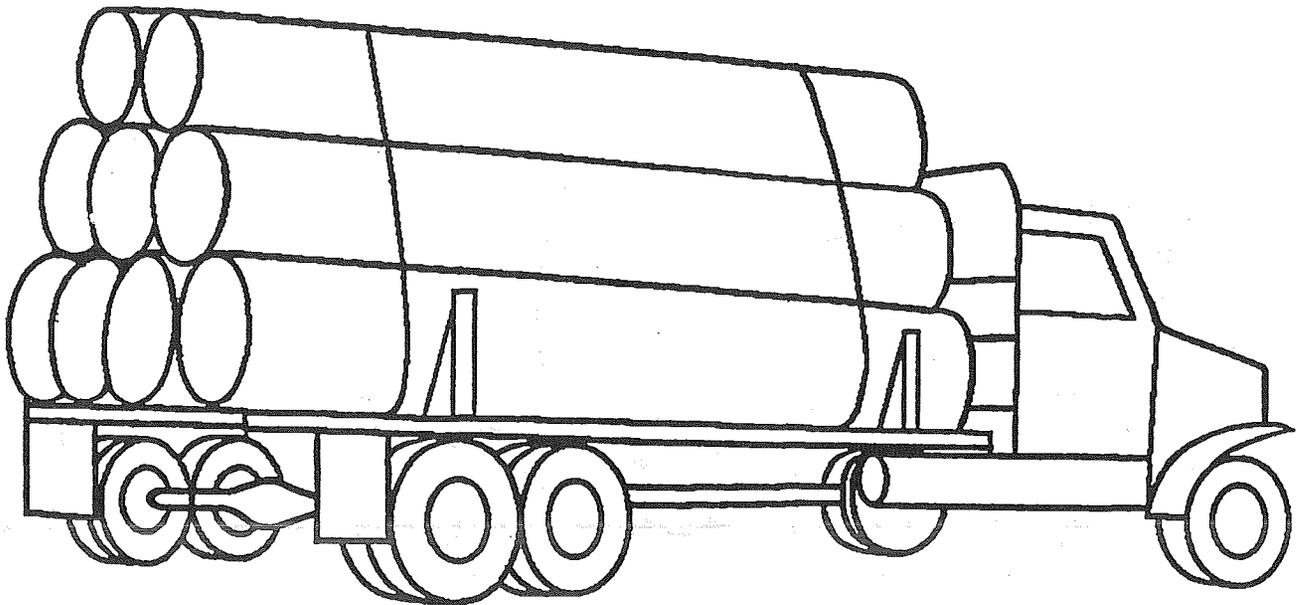


Figure 30: Seven or More Log Load All Logs 17 feet or less

Safety Standards—Logging Operations

Five or More Log Load if Any Logs Are More Than 17 Feet

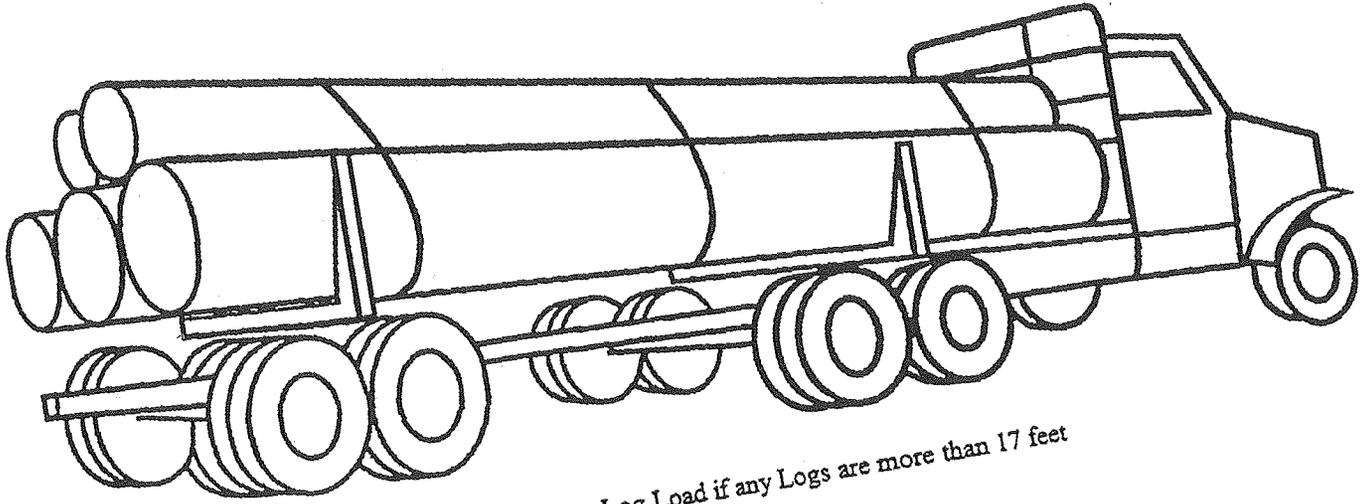


Figure 31: Five or More Log Load if any Logs are more than 17 feet

Proper Support for Logs

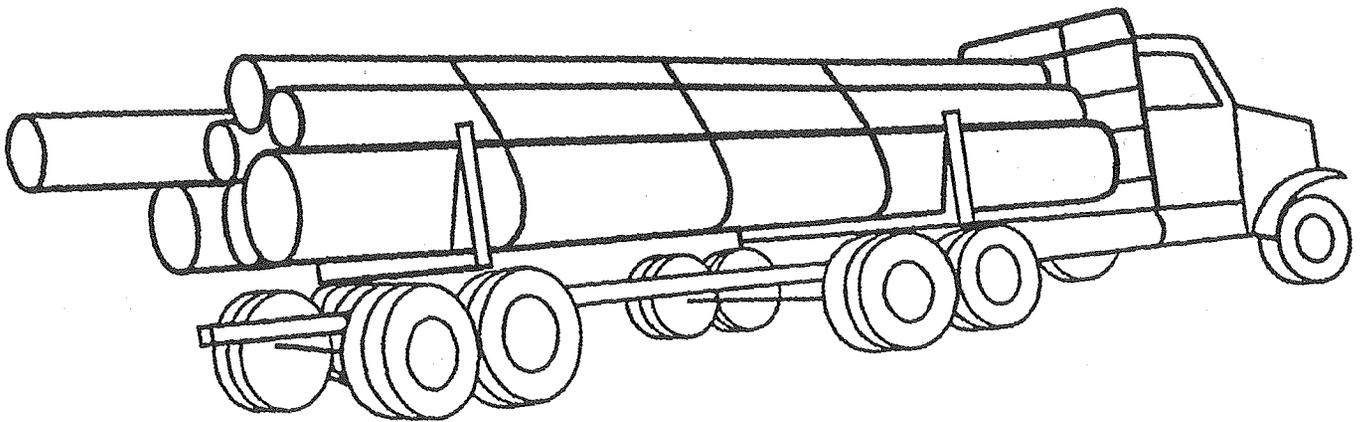


Figure 32: Proper Support for Logs

Outside Logs or Top Logs

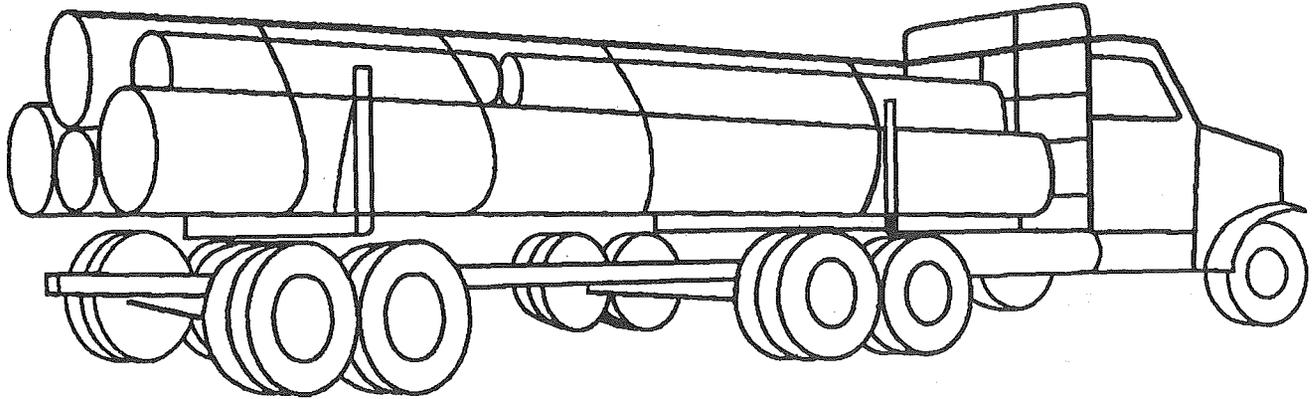


Figure 33: Outside Logs or Top Logs

A Wrapper Must Be Near Each Bunk

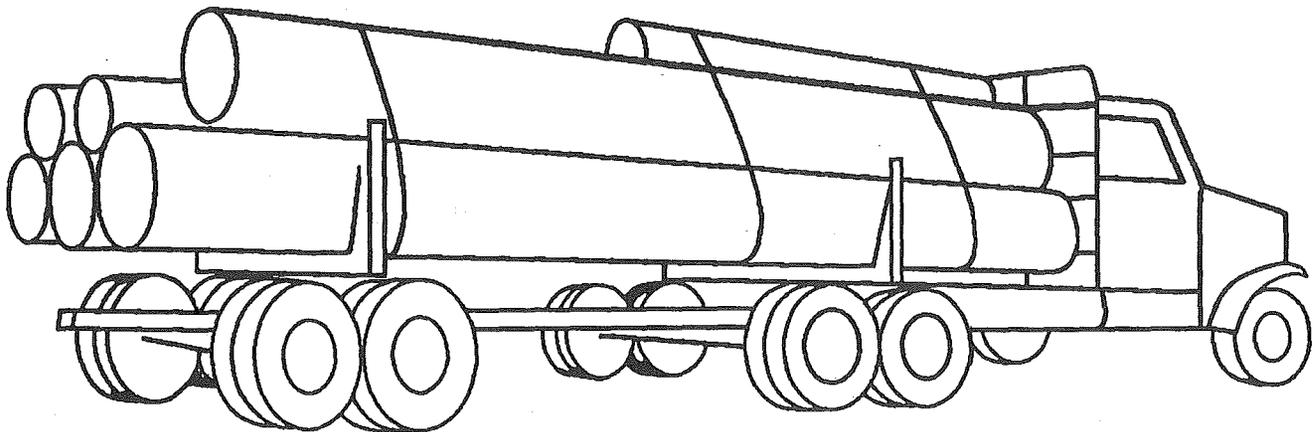


Figure 34: A Wrapper must be near each bunk

Short Logs Loaded Crosswise

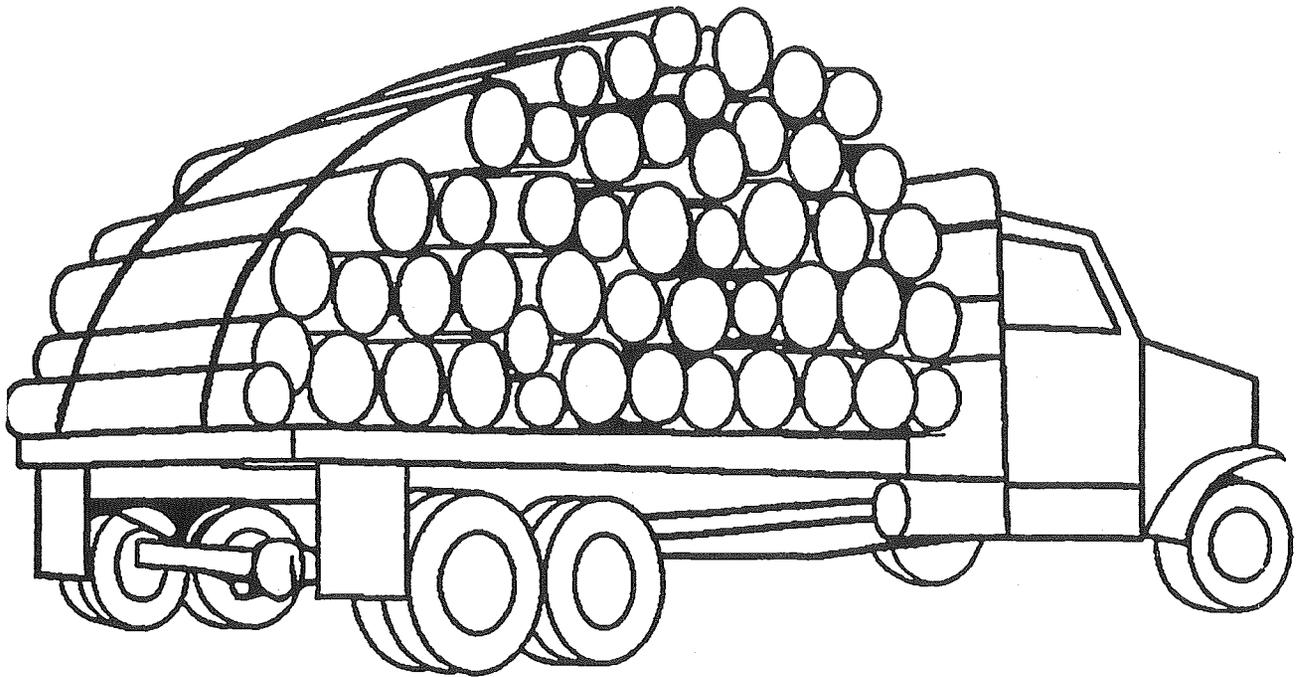


Figure 35: Short Logs Loaded Crosswise

Note: All loads of logs on logging trucks equipped with chock blocks instead of stakes, must have at least one additional wrapper over and above the requirements for trucks equipped with stakes, except on one and two log loads and trucks with short logs loaded crosswise.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58950, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58960 Log trucks—Miscellaneous requirements. (1) A truck wheel must not have more than twenty-five percent of the lugs missing or defective.

(2) All truck wheels must be maintained free of cracks, breaks, or defects.

(3) Windshields on all equipment must have windshield wipers in good working condition.

(4) Mule train trailers must have a platform on the trailer tongue at least twelve inches by twenty-four inches made of nonslip material and able to support at least three hundred pounds. The platform must be self-cleaning.

(5) Trailer loading and unloading straps, links, or chains must be fastened securely to the trailer frame and used in hoisting the trailer. The connections must be maintained in good condition and not be attached to the trailer bunk. Using molles for this purpose is prohibited.

(6) When unloading trailers from trucks, the trailers must be hoisted clear, the truck driven forward a safe distance, and the trailer lowered to within one foot of the roadway before persons approach the trailer or reach.

(7) Trailer hoisting or unloading straps must be constructed and installed in a manner enabling the loading or unloading machine to engage the strap without manual personal contact.

(8) All motor vehicles must be equipped with a horn that is audible above the surrounding noise level. The horn must be sounded before operating the vehicle in reverse gear and when necessary to alert employees.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58960, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58970 Log trucks—Steered trailers. Steered trailers, not controlled from the truck cab, must be designed, constructed, and operated as follows:

(1) A secure seat with substantial foot rest must be provided for the operator at the rear of the bunk. Any arrangement that permits the operator to ride in front of the bunk is prohibited unless a false bunk or other adequate protection is provided for the operator.

(2) The seat for the operator must be so arranged that he has an unobstructed exit from both sides and the rear.

(3) The bunk support must be so constructed that the operator has a clear view ahead at all times.

(4) Adequate means of communication must be provided between the operator and the truck driver.

(5) Eye protection and respirator must be provided for the operator.

(6) The trailer must be equipped with fenders or splash plates to protect the operator from mud and dust so far as possible.

(7) If used during periods of reduced visibility on roads not under the control of the state department of transportation, counties, or cities, the trailer must be equipped with head, tail, turn and stop lights.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58970, filed 8/18/99, effective 12/1/99.]

WAC 296-54-591 Stationary log truck trailer loading. (1) All loading devices must be designed, constructed and maintained so as to have a five to one safety factor for the rated load capacity.

(2) Loaders must be high and wide enough so they can safely load the maximum-sized trailers they are expected to handle without hanging up or striking the equipment.

(3) Electric-powered trailer loading devices must be equipped with a switch or device that will safely limit the upper direction of travel of the load line.

(4) Electric motors used for hoisting must be equipped with approved overload switches or breakers.

(5) Electrical switch controls must not exceed twenty-four volts. All control switches must be the momentary-contact type that require continuous manual pressure for the hoist to operate.

(6) Pendant control switches must be suspended by a chain or other suitable device that will prevent placing a strain on the electrical cable.

(7) Pendants must be installed so that the control switch does not touch the ground when retracted.

(8) All electrical equipment must be weatherproof-type or adequately protected from the weather, and must meet or exceed the requirements of the National Electrical Code as promulgated by the director of the department of labor and industries pursuant to RCW 19.28.060.

(9) Trailer loaders, except A-frames or bridge crane, must be equipped with reach guides or devices that will keep the reach in proper alignment. A tag rope or other safe guidance device must be used to guide trailers being loaded by an A-frame loader.

(10) Access roads and the area around the trailer loading devices must be kept free of standing water and debris and maintained in good repair.

(11) The maximum capacity load to be lifted must be posted in a conspicuous location where it can be easily seen by any person operating the hoist.

(12) Trailer loading equipment must be periodically inspected at least every thirty days and must be maintained in good repair. A written report must be made and signed by the person making the inspection and kept on file by the company for twelve months.

(13) The employer must conduct an annual lifting test on each loading device and maintain a written record of the test.

(a) The written record must contain:

- The date of the test;
- The name of person conducting the test;
- The amount of weight lifted; and
- The results kept in the office of the employer or at the site.

(b) The test weight must be at least one hundred twenty-five percent of the maximum rated load and a maximum of one hundred thirty percent of the maximum rated load.

(14) Each drum must be designed and arranged in such a manner that the line will maintain lead and spool evenly without chafing, crossing, or kinking.

(15) A braking system must be installed that has the ability to safely brake and hold one and one-half times weight of the full rated load.

(16) When trailers are to be loaded after dark, sufficient lights must be provided for a safe operation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-591, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-591, filed 9/21/79.]

WAC 296-54-593 Log unloading, booms, and rafting grounds—Storage and sorting areas—General. (1) At least two persons must be present for all storing, sorting, or boom work, except for boomboat operations.

(2) In operations where regular logging machinery, rigging, etc., is used, the applicable rules apply.

(3) The employer must provide and ensure the use of artificial lights where employees work between the hours of sunset and sunrise. The lights must be located in a manner that will:

- Be reasonably free of glare;
- Provide uniform distribution of illumination; and
- Avoid sharply defined shadows.

(4) On all log dumps, adequate power for the unloading method used must be provided. All machines used for hoisting, reloading, or lowering must be of an approved design and have enough power to control or hold the maximum load imposed in mid-air.

(5) Methods of unloading logs must be arranged and used in a manner to provide full protection to all employees.

(6) Binders must not be released from any load until an effective safeguard is provided.

(7) All mobile log handling machines must be equipped with a means to prevent the logs from accidentally leaving the forks, and it must be used.

(8) The operator of the unloading machine must have an unobstructed view of the unloading area or must make certain no one is in the area where the logs are to be unloaded. Rear-view mirrors must be installed on mobile log handling equipment to assist the operator in determining that the area behind the machine is clear before backing up.

(9) Unloading lines must be arranged so that it is not necessary for an employee to attach them on the pond or dump side of the load.

(10) Life rings with a minimum of ninety feet of 1/4-inch line with a minimum breaking strength of five hundred pounds attached, must be provided at convenient points adjacent to water that is five feet or more in depth. Life rings must be a minimum of thirty inches outside diameter and seventeen inches inside diameter and be maintained so as to retain a thirty-two pound positive buoyancy.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-593, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-593, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-593, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-593, filed 9/21/79.]

WAC 296-54-59310 Log unloading, booms, and rafting grounds—Water dumps. (1) All water dumps must have brow logs except when logs are lifted from the load. If portable equipment is used, adequate stops must be provided to prevent equipment from running off the dump.

(2) Where necessary for employees to walk alongside loads and equipment on trestles or fills, a minimum twenty-two inch wide walkway must be provided, unless otherwise specified.

(3) All decks and plankways on log dumps must be kept in good repair and free from bark and other debris. Roadways must not be inclined more than one inch to twelve inches across the driving surface.

(4) The use of small bridge-over logs, planking, or timbers between regular foot logs, or walkways, which will not support the weight of at least three persons are prohibited. All regular foot logs must be barked on the upper side.

(5) Electric-powered hoists using hand-held cord remote controls in grounded locations must be actuated by circuits operating at no more than twenty-four volts. All control switches must be the momentary contact type that require continuous manual pressure for the hoist to operate.

(6) Roadbeds at log dumps must be hard-packed gravel, heavy planking, or equivalent material, and must be of sufficient width and even surface to ensure safe operation of equipment.

(7) Where logs are unloaded on to rollways, enough space must be provided between the top of the skids and the ground to clear the body of a person.

(8) When a brow log is used with a parbuckle system, all persons are prohibited from going between the brow log and the load of logs at any time.

(9) A positive safeguard must be provided to prevent logs from leaving the loads on the side opposite the dump. Unloading lines, crotch lines, or other equivalent means must be arranged and used in a manner to prevent any log from swinging or rolling back.

(10) All employees must remain in the clear until all moving equipment has come to a complete stop.

(11) Logs must not be unloaded by peaves or similar manual methods, unless means are provided and used that eliminate the danger from rolling or swinging logs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59310, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59320 Log unloading, booms, and rafting ground—Boom and rafting grounds. (1) Breaking of log jams by peavy method is prohibited, except in river drive or when a jam occurs away from a mechanical means or the dump.

(2) Wooden pike poles must be made of continuous, straight-grained No. 1 material.

(a) Defective poles, blunt or dull pikes must not be used.

(b) Conductive pike poles must not be used where there is a possibility of coming in contact with energized electrical conductors.

(3) Stiff booms must be made of at least two boom sticks and must be at least thirty-six inches wide measured outside to outside of the logs. The boom sticks must be fastened with at least 4" x 6" cross ties, or cable lashings notched into the

boom sticks may be used when stiff booms are exposed to heavy swells. Stiff booms must be kept free of loose bark and maintained in good repair.

(4) A walkway thirty-six inches wide with standard hand railing must be provided from the shore end of stiff boom to shore.

(5) All sorting gaps must have a substantial stiff boom on each side of gaps. Such stiff booms or walkways must be planked over.

(6) Boom sticks must be reasonably straight with no protruding knots or loose bark. They must be able to support above the water line at either end the weight of one employee and equipment or two hundred fifty pounds.

(7) Foot logs must be reasonably straight with no protruding knots or loose bark and large enough to support above the water line at either end the weight of two employees and equipment or five hundred pounds.

(8) Unsafe boom sticks must be marked by three chopped crosses ten feet from the butt end, and those sticks must not be used as boom sticks.

(9) Gaps between boom sticks must not exceed twenty-four inches. All wire must be removed from boom sticks and boom chains before they are re-used or hung in rafting stalls.

(10) When permanent cable swifters are used, they must be arranged so that they are within easy reach of the rafter without rolling the boom sticks on which they are fastened. When cables become hazardous to use because of jagers, they must be discarded.

(11) When a floating donkey or other power-driven machinery is used on a boom, it must be placed on a raft or float with enough buoyancy to keep the deck of the raft or float well above water. Wherever employees walk, the deck of the raft or float must be planked over with at least two inch planking, and kept in good repair.

(12) When doglines used in rafting, brailing, or stowing logs become hazardous to use because of jagers, they must be discarded.

(13) Sufficient walkways and floats must be installed and securely anchored to provide safe passage for employees.

(14) Walkways alongside sorting gaps must be at least four feet wide. Other walkways must be at least twenty-two inches wide.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59320, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59330 Log unloading, booms, and rafting grounds—Boats and mechanical devices on waters.

(1) Before starting the boat motor, any spilled fuel must be removed and vapors must be exhausted from any area in which they may accumulate.

(2) The bilge area must be kept clean and oil, grease, fuel, or highly combustible materials must not be allowed to accumulate.

(3) Adequate ventilation equipment must be provided and used for the bilge area to prevent the accumulation of toxic or explosive gases or vapors.

(4) Adequate ventilation equipment must be provided and used for the cabin area on enclosed-cabin boats to prevent an accumulation of harmful gases or vapors.

(5) Deck and cabin lighting must be provided and used where necessary to provide safe levels of illumination aboard boats. Boats operated between sunset to sunrise, or in conditions of restricted visibility, must display navigation lights as required by the United States Coast Guard. Searchlights or floodlights must be provided for safe navigation and to illuminate working or boarding areas adjacent to the craft.

(6) On craft used by employees wearing calked shoes, all areas where employees must stand or walk must be made of or be covered with wood or other suitable matting or nonslip material. The covering must be maintained in good condition.

(7) Each boat must:

(a) Be provided with a fire extinguisher; and

(b) Have a life ring with at least fifty feet of one-fourth inch line attached.

Note: On log broncs, boomscooters, or other small boomboats where all occupants are required to wear life saving devices and a life ring would present a tripping hazard, the life ring may be omitted.

(8) Along docks, walkways, or other fixed installations on or adjacent to open water more than five feet deep, approved life rings with at least ninety feet of one-fourth inch line attached, must be provided. The life rings must be spaced at intervals not exceeding two hundred feet and must be easily visible and readily accessible.

(a) When employees are assigned work at other casual locations where exposure to drowning exists, at least one approved life ring with at least ninety feet of line attached must be provided in the immediate vicinity of the work assigned.

(b) Lines attached to life rings on fixed installations must be at least ninety feet long, at least one-fourth-inch in diameter, and have a minimum breaking strength of five hundred pounds. Similar lines attached to life rings on boats must be at least fifty feet long.

(c) Life rings must be United States Coast Guard approved thirty-inch size.

(d) Life rings and attached lines must be maintained to retain at least seventy-five percent of their designed buoyancy and strength.

(e) Where work is assigned over water where the vertical drop from an accidental fall would exceed fifty feet, special arrangements must be made with and approved by the department of labor and industries prior to such assignment.

(9) Log broncs, boomscooters, and boomboats must not be loaded with employees or equipment in a way that adversely affects stability or seaworthiness.

(10) Boats must not be operated at excessive speed or handled recklessly.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59330, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59340 Log unloading, booms, and rafting grounds—Dry land sorting and storage. (1) Unauthorized foot and vehicle traffic is prohibited in the sorting or storage area.

(2) Logs must be stored in a safe and orderly manner. Roadways and traffic lanes must be kept clear of protruding ends of logs and debris.

(3) Dry deck log storage areas must be kept orderly and maintained in a condition conducive to safe operation of mobile equipment. Roadways and walkways must have a smooth hard-packed surface wide enough to permit a safe operation. Bark, mud, and other debris must not be allowed to accumulate to the extent they constitute a hazard to the operation.

(4) The employer must implement an effective method to control dust at log dumps and in sorting and storage areas.

(5) Only an authorized person shall operate or ride any lift truck, log stacker, or log unloader.

(6) Signaling log unloader operators at dry deck areas by throwing bark or chips in the air is prohibited. Hand, horn signals or other safe, effective means must be used at all times.

(7) Unnecessary talking to the operator while operating controls of a log stacker or log unloader is prohibited.

(8) Lift forks and arms of unloading machines must be lowered to their lowest position, and all equipment brakes set before the operator leaves the machine unattended.

(9) Log unloaders or stackers must not be moved about the premises for distances greater than absolutely necessary with the lift extended above the driver's head or with loads lifted higher than is necessary for vision.

(10) When truck drivers are out of the cab, they must be in the clear, and in view of the log unloader before the lift forks are moved under the load and the lift is made.

(11) Where logs are offloaded onto a dry deck by unloading lines, a self-releasing mechanism must be used. Employees are prohibited from climbing dry decks to release unloading lines.

(12) Employees must not enter the hazardous area near or under loads of logs being lifted, moved, or suspended.

(13) When log unloaders and log stackers are designed so that logs being handled may jeopardize the safety of the operator, the employer must provide overhead protection and any other necessary safeguards.

(14) Log unloaders and log stackers must be equipped with a horn or other audible warning device. If vision is impaired or restricted to the rear, the warning device must be sounded before operating the vehicle in reverse gear and periodically while backing. The warning device must be operative at all times.

(15) A limit stop, which will prevent the lift arms from over-traveling, must be installed on electric powered log unloaders.

(16) Shear guards must be installed on unloading machines and similar equipment on which the arms pivot and move alongside the operator creating a pinch point at that location.

(17) All forklift log handling machines must be equipped with a grapple arms and the arms must be used whenever logs are being carried.

(18) When log trucks are loaded by a log stacker and the lay of any log is higher than the stakes, the log stacker must remain against the completed load, or other suitable protection provided, to prevent the logs from falling until at least two wrappers and binders have been applied.

(19) All binders and wrappers must remain on the load until an approved safeguard has been provided to prevent

logs from rolling off the side of the truck or trailer when binders are released. A shear log, or equivalent means, must be provided to ensure the log truck will be stationed close enough to the wrapper rack so that a log cannot fall between the log truck and the wrapper rack when removing binders and wrappers. At least one binder must remain secured while relocating or tightening other binders. Crotch lines, forklifts, log stackers, log unloaders, or other effective means must be used for this purpose.

(20) An extra wrapper or metal band of equal strength must be placed to hold the logs when it is necessary to remove a wrapper to prevent it from being fouled by the unloading machine.

(21) Machines with arms that block the regular exit when in the up position must have an emergency exit installed.

(22) Riding on any part of a log handling machine except under the canopy guard is prohibited.

(23) Identification tags must not be applied or pulled unless logs are resting in a stationary place, such as bunks, cradles, skids, or sorting tables.

(24) Employees must not approach the immediate vicinity of a forklift-type log handling machine without first notifying the operator of the person's intention and receiving an acknowledgement from the operator.

(25) When dry land log dumps use unloading methods similar to those of water dumps, the safety standards for water dumps apply.

(26) When logs are handled between sunset and sunrise or other periods of poor visibility, the employer must provide illumination that meets the requirements of WAC 296-62-09003 relating to illumination.

(27) Air operated stake releases must meet the following requirements:

(a) The air supply must be taken from the "wet" air reservoir or from the accessory air line to a spring loaded, normally closed control valve;

(b) The control valve must be located in the cab, positioned so that it is accessible only from the operator's position;

(c) The control valve must be fitted with a spring-loaded cover or otherwise guarded against inadvertent operation; and

(d) A separate air line must extend from the control valve to the tractor and trailer stake release chambers. The air line must be clearly identified or installed so that it cannot be mistaken for the service or emergency air line.

(28) Each deck must be constructed and located so it is stable and provides each employee with enough room to safely move and work in the area.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59340, filed 8/18/99, effective 12/1/99.]

WAC 296-54-595 Transporting crews.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-595, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-595, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-595, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-595, filed 9/21/79.]

WAC 296-54-59510 Speeders used to transport crews. (1) All speeders must be equipped with two separate and independently operated braking systems, either of which must be of sufficient capacity to lock all wheels when speeder is fully loaded;

(2) All speeders used for transporting crews must be equipped with methods for sanding tracks, operative for both directions of travel.

(3) Electric lights of sufficient candle power and range so that vehicle can be stopped within the range of the beam, and which will shine in the direction of travel, must be provided on all speeders.

(4) Adequate tail lights must be installed and maintained in good order.

(5) Automatic windshield wipers of sufficient capacity to maintain clear visibility must be installed on all speeders.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59510, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59520 Trailers used to transport crews.

(1) When trailers are coupled behind speeders, they must be equipped with two separate and independent braking systems, either must be of sufficient capacity to lock all wheels when the trailer is fully loaded. One of these must be power operated and must be controlled from the speeder; the other manually operated from the trailer. One person must be designated to operate this brake in case of emergency.

(2) All trailers must be coupled to speeders with metal couplings and safety chains or straps of sufficient strength to withstand the impact caused by a broken coupling.

(3) No trailer shall coast or be used as a crew car without being attached to a speeder.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59520, filed 8/18/99, effective 12/1/99.]

WAC 296-54-597 Railroads.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-597, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-597, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-597, filed 9/21/79.]

WAC 296-54-59710 Railroad construction and maintenance. (1) All construction must be according to safe logging practices as to size of rails, ties, track accessories and methods of installing same.

(2) Rail guards must be placed on main lines and spurs, consistent with the type of traffic and general local conditions.

(3) Rail anchors of approved design must be installed wherever practicable.

(4) Frogs, switches, and guard rail ends must have either patent or wooden foot guard blocking installed.

(5) Slip plates must be used under all switches and switch points.

(6) All above ground wire for permanent telegraph or telephone lines used for dispatching must be well strung on insulators and must be clear of the ground and obstructions.

(7) Where telephone lines are strung under or near power lines, foot stools mounted on insulators in front of telephone boxes must be used, unless other protection is provided, which affords a substantially equivalent measure of safety.

(8) Foundations, pile trestles, framed bent trestles, mud sills, or other framework of all structures must be adequate to support the maximum imposed loads without exceeding the maximum safe working unit stresses.

(a) The structure must be maintained in good condition and repair.

(b) The structure must be inspected at least annually by a qualified person.

(c) The employer must maintain records of the inspections and make the records available to the department on request.

(9) Outside wooden guard rails must be installed on all railroad bridges except that outside wooden rails will not be required where inside steel guard rails are used;

(a) They must extend not less than six inches above the top of the ties and must be bolted or spiked to ties at intervals of not more than five feet; and

(b) Spacer blocks must be used unless ties are spiked to stringers, or guard rails are dapped to avoid need for spacer blocks.

(10) Guard rails must extend at least six inches above the top of the ties and are bolted or spiked to ties at maximum intervals of five feet. Spacer blocks must be used unless ties are spiked to stringers, or guard rails are dapped to avoid need for spacer blocks.

(11) Regular bridge ties of not less than ten feet in length must be used on all railroad bridges constructed after the effective date of these standards.

(12) Trestles and bridges longer than two hundred fifty feet must have safety platforms with safe standing space for two persons installed. The platforms must be spaced so that a person on the trestle or bridge is never more than one hundred twenty-five feet from a safety platform or the end of the bridge or structure.

(13) All railroad bridges and trestles used regularly as footways must have a plank walkway between the rails that is at least twelve inches wide and two inches thick. The walkway must extend from end to end of the bridge or trestle.

(14) A suitable substantial walkway at least three feet wide with handrail must be installed on bridges or trestles where train crews must perform routine inspection or repair work on trains. Substantial platforms and handrails must be provided where switches are located on bridges or trestles. Adequate clearance must be allowed for the throw of the switch.

(15) All dangerous trees, snags or brush must be cleared a safe distance from both sides of the track. Any obstruction that will create a transportation hazard must be removed.

(16) Material must be provided that will promote secure footing at places alongside the track where employees customarily perform duties, such as inspecting loads, setting brakes by hand, or throwing switches.

(17) The distance between any main tracks and a side track must allow a clearance of four feet between bunk ends and locomotive cabs.

(18) The following clearances must be maintained:

(a) At least eight feet horizontal clearance on each side of the center line of standard gauge mainline railroads; and

(b) At least twenty-two feet vertical clearance above the top of each rail (according to standard railroad engineering practices).

(19) Derailers must be installed as follows:

(a) Derailers must be installed and used on all landings, passing tracks, and spurs where cars are left on a grade.

(b) Derailers must be close to standing equipment.

(c) The operation of a derailer must not create a hazard to buildings and other railroad lines.

(d) Derailers must not be installed on the inside rail on a sharp curve.

(e) Derail signs must be set on both sides of the track even with the derailer.

(f) An unneeded derailer must be removed or rendered inoperative.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59710, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59720 Railroad operations. (1) Employees must report accidents, detention of trains or speeders, failure in supply of fuel or water, defects in track, bridges, or signals to the supervisor by the quickest possible method.

(2) Any logging railroad may maintain a special set of operating rules applicable to their logging operation, provided that said rules are acceptable to the department of labor and industries.

(3) Each logging railroad operation with more than one piece of railroad equipment in operation, must have a dispatcher on duty. All equipment must receive clearance from the dispatcher.

(4) Train crew size must be based on the number of persons needed to safely operate the train under all prevailing conditions. When necessary to set hand brakes, two or more persons must be assigned to set the brakes and to give signals.

(5) All locomotives must be equipped with sanding devices for both rails, front and rear, in proper working order. Clean, dry sand should be used.

(6) Locomotives must be equipped with power brakes (air or steam) on all driving wheels. Tenders must also have power brakes.

(7) All locomotives and speeders, operating between sunset and sunrise or other periods of reduced visibility, must be equipped with and use head lights that shine in the direction of travel. The lights must be bright enough so the train can be stopped within range of the light beam. Cab lights must be provided and maintained so the operators can see from their required positions the gauges and equipment necessary for operation.

(8) All locomotives must be equipped with proper grab irons, hand holds, steps, and running boards.

(9) All locomotives must be equipped with automatic couplers, suitable for low or high draw-bars.

(10) On all rolling stock, wheels with sharp or badly worn flanges, must be replaced. Avoid using flat wheels.

(11) All locomotives with tender must have an apron of proper length and width to ensure safety. The apron must be roughened to ensure secure footing.

(12) Handholds and footboards must be provided on locomotive cranes, except where the cab overhangs the end of the car.

(13) Trains and speeders must not exceed a safe speed.

(14) The trainmen must test the air brakes before leaving the terminal. Enginemen must not proceed until they are satisfied by brake action that the brakes are able to control the train.

(15) All of the cars in a train must have brakes in good operating condition.

(16) On railroads where joint logging operations of two or more firms are necessary, trains must be dispatched at least fifteen minutes apart. Red lights must be displayed on the rear of such trains at night or when visibility is poor.

(17) Whenever cars are left on grades, derailleurs must be provided. Derail signs must be placed near derailleurs. In setting out equipment, care must be used in seeing that proper clearance is provided.

(18) Standard pressure for mountain grades requires a pressure of ninety pounds in train pipe, one hundred ten pounds in main reservoirs (low pressure) and one hundred thirty pounds in high pressure to ensure quick releasing of brakes and recharging of auxiliaries. Engineer must see that the engine carries these pressures and that sanders, both forward and rear, are in working order. On all heavy grades the high pressure retaining valve must be used and before train is started from landing, a test of brakes must be made and piston travel adjusted, if necessary, and retaining valves put up. Engineer must start train away from landing slowly, giving wheels a chance to roll before applying brakes and, to avoid skidding of wheels, using sand freely. Brakes should then be applied immediately and released, allowing the retaining valves to hold the train while train pipe and auxiliaries are being recharged. Train speed should be held to the required rate by setting and releasing brakes as it is necessary to control train.

(19) When necessary to leave loads on a pass while switching a side, loads must be left close to the derailer, air set and enough hand brakes set up, before cutting the engine from the train.

(20) The engineer must see the car or signal person when making couplings, giving the train crew enough time to align drawheads and open knuckles of coupler, especially on curves, except when using radios.

(21) Drawbars should not be aligned with the foot while cars or engines are in motion. The train crew must not climb between cars while in motion. Engineers must not drift too close to switches that are to be thrown. The position of switch points should always be observed after throwing switch. The switch lever should be pushed firmly into the notch before leaving the switch. No persons except trainmen, unless authorized, shall ride on engine footboards. Throwing objects from the train or engine while in motion is prohibited. A bell must be rung or whistle blown before moving the locomotive.

(22) Equipment must not be pushed ahead of a locomotive unless a brake tender is on the head car in constant view of the engineer or second brake tender in a position to receive and pass the signal to the engineer.

(23) In addition to air brakes, hand brakes must be provided on all cars and maintained in good working order.

(24) Hand brakes must be easily accessible to brake tenders when cars are loaded. When wheels or staff brakes are used they should be placed on the side opposite the brow log at the dump to prevent their damage when cars are unloaded. All switch throws, walkways, and cleared areas for brake tenders must be on the hand brake side.

(25) All brake hickies must be made from three-fourths inch hexagon steel (high grade) and be twenty-four inches with a good claw on one end to fit the wheel and a knob on opposite end to prevent slipping from the brakeman's hand.

(26) All railroad trucks and cars, where brakes are set by hand while in motion, must have good footboards and toeboards on the brake end.

(27) A ten-inch bunk block is recommended on all trucks to prevent logs from slipping over block.

(28) All cars other than logging trucks must have hand hold and foot steps to permit employees to get on and off easily and safely.

(29) All cars and trucks regularly operated must have automatic couplers.

(30) Locomotives and cabooses must carry the following equipment:

- 1 red light (lantern type)
- 3 red flags
- At least 3 fuses

(31) When a train stops between telephones, or where the rear of a train extends beyond yard limits, the rear of the train must be properly protected.

(32) A whistle sign board must be placed one thousand two hundred feet from each side of highway crossings.

(33) A rail clamp must be placed to hold cars left on a grade on main line or spurs.

(34) All cars and trucks must be legibly numbered so that those with defects may be reported and taken out of service. Each locomotive, speeder, or other self-propelled vehicles must be numbered, or otherwise made readily identifiable.

(35) All cars used for hauling logs must be equipped with patent stake bunks, or bunks with chock blocks and/or chains, constructed so that the block can be released from the opposite end of the bunk unless solid stakes are used.

(36) All main line trains of more than ten loaded cars must have a caboose at the rear of the train.

(37) All logging operations having both truck roads and railroads must post signs at intersections same as public crossings.

(38) The following engine whistle signals are established as standard and are taken from the American Association of Railroads. The signals prescribed are illustrated by "o" for short sounds and "-" for long sounds. Audible whistle must be sounded when approaching camps, junctions, grade crossings and other prescribed places as required by the American Association of Railroads:

- | | |
|-------------|---|
| One short | (o) Stop, apply brakes. |
| Two long | (—) Release brakes. |
| Three long | (—) When running, train parted, to be repeated until answered by hand signal. |
| Two short | (oo) Answer to any signals not otherwise provided for. |
| Three short | (ooo) When train is standing back. |

Four short	(oooo) Call for signals.
Two long, two short	(—oo) Approaching highway crossing at grade.
One long	(-) Approaching station, rollway, chute, crossing, junctions, and derailers. When standing, air leak.
Six long	(——) Repeated at intervals, call for section crew, train derailed.
One long, three short	(-ooo) Flagger to go back and protect rear of train.
Four long	(——) Foreman.
Five long	(——) Flagger to return from any direction.
Long, short	(-o-o-o) Repeated four or more times, fire alarm.
Seven long, two short	(——oo) Repeated, person hurt.
One long, one short	(-o) Repeated at intervals, closing down.
Groups of shorts repeated	(oooooo) Danger of runaway.

Unnecessary use of whistle is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59720, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59730 Railroad maintenance—Loading or unloading. (1) Whenever track gangs, bridge crews, etc., work on railroads that are in use, the following signal systems must be implemented:

(a) A yellow caution flag by day and a yellow lantern by night is placed far enough in each direction from the crew to protect them against approaching equipment. The operator of approaching equipment must acknowledge the signal by two short blasts of the whistle or horn and proceed with caution.

(b) When crews are removing or replacing a rail or performing any other work that would make it necessary for approaching equipment to come to a stop, a red flag during daytime work and a red lantern during nighttime work is placed in the center of the track far enough in each direction from employees to protect them against approaching equipment. The operator of approaching equipment must:

- (i) Acknowledge the signal by one short blast of the whistle or horn;
- (ii) Come to a dead stop; and
- (iii) Remain standing until the signal is removed by the person who placed it, or until investigation proves that the track is safe for passage.

(c) The employer may choose to use a flagger in place of meeting the above requirements.

(2) Where clearance is scant, warning signs or signals must be posted.

(3) Switch throws should be kept well oiled and targets and signs in good legible condition.

(4) Standard clearances must be maintained at all points on the right of way. However, if clearance is necessarily restricted in loading or unloading areas or at water tanks, fuel tanks, etc., then warning signs must be posted at these locations.

(5) The employer must provide adequate safeguards to protect employees performing the following tasks:

- Repairing railroad equipment;
- Working on or in railroad equipment;
- Loading or unloading cars; or
- Performing other duties where there is danger of the railroad equipment being struck by other moving railroad equipment.

(a) A derail must be used to prevent other rail equipment from contacting such cars or equipment or endangering employees. After cars are spotted, blue flags must be placed in the center of the tracks at least fifty feet from the end car during the day and blue lights must be installed at such locations at night.

(b) Flags, lanterns, or derails must be removed only by the person placing them unless they are to remain posted for a longer period of time. In which case one person on each oncoming shift must determine that they are in place and they must not remove the safeguards until certain that all employees are in the clear.

(c) Operators of approaching equipment must not pass or remove a flag or lantern that is properly posted. Cars or other equipment must not be placed where they will obscure the signal from an operator controlling approaching equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59730, filed 8/18/99, effective 12/1/99.]

WAC 296-54-599 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-54-601 Signals and signal systems. (1) Standard hand or whistle signals as described in this chapter must be used for the movement of rigging, logs, or equipment when using a high lead, slackline, or cable skidder system for yarding. For hand signal illustrations, see appendix 1.

(2) Voice communication may be used to move rigging and control movement of logs, provided a standard audible whistle signal is sounded before any line is moved.

Note: Subsections (1) and (2) of this section do not apply to grapple or other special yarding systems where employees are not exposed to the movement of logs or rigging.

(3) Voice communications may be used for grapple yarding under the following conditions:

(a) Voice communications by use of radio frequencies may be used to transmit instructions and directions to the yarder operator when using a grapple type logging system, if no employee is in a hazardous area near live rigging.

(b) Voice communication may be used to instruct the yarder operator when picking up an occasional log with the use of a choker on a grapple system, if the grapple is on the ground before the setting of the choker and no lines are moved by the operator until the person setting the choker has returned to a safe location away from any running lines. When a number of logs must be yarded by using chokers instead of the grapple, the requirements for high lead logging apply.

(4) Voice communication on the same radio frequencies used to transmit skyline, high-lead, slackline or skidder whistle signals (154.57 and 154.60 MHz channels), must be limited to reporting injuries, fire, and emergency situations

where special tools or precautions are needed to prevent or alleviate a hazardous situation. In addition:

(a) The rigging crew must call the yarder engineer by name to ensure that proper contact is established;

(b) The yarder engineer must acknowledge the call with a whistle "stop" signal before the caller starts transmitting the voice message;

(c) Voice transmission must be kept as brief and to the point as possible; and

(d) After receiving the voice message, the yarder engineer must again acknowledge with a whistle "stop" signal that the message has been received and is clearly understood.

(5) If a standard signal is not listed for an unusual or new situation, a hand or whistle signal other than any listed for the type of yarding being done may be used for the specific situation only. Any special signals developed must be understood by all persons working in the area who may be affected by their use.

(6) A copy of the standard hand and whistle signals must be posted on the yarder and at places where crews congregate. For tractor logging operations, hand signals must be posted at places frequented by the crew members such as in crew buses, etc.

(7) Only one person in any crew shall give signals at the point where chokers are being set. Any person is authorized to give a stop signal when someone is in danger or another emergency condition is apparent.

(8) Hand signals are permitted only when the signal person is in plain sight of the machine operator and when visibility allows signals to be seen. Hand signals may be used at any time as an emergency stop signal.

(9) Throwing of any type of material or relying on engine noise, such as from a chain saw, as a signal is prohibited.

(10) All persons must be in the clear before any signal is given to move the rigging, logs, or turns. Rigging, logs, or turns must not be moved until after the proper signals have been given.

(11) Machine operators must not move any line unless the signal received is clear and distinct. If in doubt, the operator must repeat the signal as understood and wait for confirmation.

(12) A horn or whistle that is automatically activated by the radio or electric signaling system must be used on each yarder used for skyline, high lead, skidder or slackline system of yarding, except where hand signals or voice communication as described in subsection (2) of this section is permitted. The horn or whistle must emit a sound that is clearly audible to all persons in the affected area and must be sounded before any line is moved. Such a horn or whistle is also required on combination yarding and loading machines and tree pullers. Audible signals are not necessary on grapple or other yarding systems where persons are not exposed to the movement of logs or rigging.

(13) All radio-controlled motorized carriages and sky-cars must have a warning horn which must be sounded before any lines or loads are moved or an audible whistle must be sounded from the yarder.

(14) Each unit of the signal or control system in use must be tested daily before logging operations begin. Audible sig-

nals used for test purposes must not include signals used for the movement of lines or materials.

(15) Citizen band (CB) radios must not be used to activate any signal, machine, or process, either automatically or by voice. CB radios may be used for communication between sides, vehicles, work units, or for emergency situations.

(16) When audible whistle signals are being used simultaneously by yarding and loading machines at a landing, signal whistle or horn tones used in connection with machine movements must be so differentiated as to distinctively identify any intended work movement of either machine.

(17) When the normal crew configuration consists of two or more persons at the point where chokers are being set, they must each carry an operable transmitter on their person. Only one transmitter is required if:

(a) The signal person has no other duties and remains in an area where there are no hazards created by the moving rigging or logs; or

(b) The rigging crew is comprised of only one employee.

(18) The use of a jerk wire whistle system for any type of yarding operation is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-601, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-601, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-601, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-601, filed 9/21/79.]

WAC 296-54-603 Electric signal systems. (1) Where an electrical signal system is used, all wires, attachments, and connections must be weatherproof.

(2) Electric signal systems must be properly installed and adjusted. They must be protected against accidental signaling and must be maintained in good operating condition at all times. Enough signal wire must be provided to enable good voice contact between the whistle punk and rigging crew at all times.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-603, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-603, filed 9/21/79.]

WAC 296-54-604 Radio signaling permits. To apply for a new radio signaling permit, to request a change in a permit, or to request a change in the use area for any permitted system, write to:

WISHA Services Division—Permits
Department of Labor & Industries
P.O. Box 44650
Olympia, WA 98504-4650

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-604, filed 8/18/99, effective 12/1/99.]

WAC 296-54-605 Radio systems used for voice communication, activation of audible signals, or control of equipment. (1) A valid operating permit must be obtained by the owner from the department of labor and industries, prior to putting into use any radio signaling or control system

intended to be used in conjunction with any type of cable logging operations.

(a) Permits will be issued only for systems licensed for such use and using those carrier frequencies as authorized by the Federal Communications Commission.

(b) Permits will be granted only when tone or function frequencies are compatible with other radio systems in use and when in compliance with all other applicable requirements of this chapter.

(2) The department of labor and industries reserves the right to designate the use of radio frequencies for specific purposes or functions. For example: Frequencies may be specified for voice transmission of instruction, others for tone-coded functions, or activation of signaling devices.

(a) Single tone coded functions must not be used on radio equipment designed to initiate whistle signals, or to activate or control any machine, material-handling device, or other equipment hazardous to employees.

(b) The department may also designate which tone frequencies may be used for the activation of a signaling device or for control of equipment on certain federal communication assigned carrier frequencies.

(3) A list of tone frequencies that may be used with any Federal Communications Commission assigned carrier frequencies will be made available from the department upon request.

(4) The department will assign the area or areas in which a radio signaling system may be used and mark those areas on the permit. Radio signaling systems must not be used in any area other than the ones indicated on the permit. (See Figure 36: Areas for Use of Radio Signaling Systems for Logging Operations.)

(5) The person or firm name on the permit must be the same as the person or firm operating the radio signaling system except for loaner or rental sets. A person or firm using a loaner or rental set is responsible for the radio signal system as if they were the owner of the set.

(6) The application for a permit to use a radio signaling system must contain the following information (see Figure 37: Application for permit to operate radio signal system in designated area):

(a) Name and address of applicant.

(b) The radio frequencies of the radio signaling device in MHz.

(c) The tone frequencies of the radio signaling system used to activate a horn, whistle, or control equipment in Hz. The security gate, or pulse tone, must be shown first.

(d) The name of the manufacturer of the radio signaling system.

(e) The serial number of the receiving unit.

(f) The state assigned area or location in which the unit will operate.

(g) The type of signaling used.

(h) From whom the system was purchased or acquired, and the date of acquisition of the system.

(i) Intended use and function of the system.

(7) All radio equipment must meet all applicable FCC standards. FCC identifier numbers and required information must be visible when possible.

(8) Radio equipment must not be used without displaying a permit as required by this standard. The permit must be prominently displayed on the outside case of the receiver of the unit or, for radio-controlled carriages, on the transmitter in the yarder.

(9) Each radio receiver must have its radio carrier frequency in MHz and tone frequency(s) in Hz indicated on the outside case of the receiver (see Figure 38: Radio permit):

(a) The manufacturer's name and serial number must be permanently indicated on the outside of the case;

(b) When the duration or width of the tone frequencies performs a function, the one duration/width must also be permanently indicated on the outside of the receiver case;

(c) Each transmitter must be identified with its receiver; and

(d) Two or more receivers in operation simultaneously on the same tone frequencies are prohibited unless one is used for monitoring only.

(10) It shall be the responsibility of the owner of any radio signaling system to notify the department of labor and industries, immediately, if the signal system is:

(a) Permanently retired (in what manner and date retired);

(b) Sold (submit name and address of purchaser and date sold);

(c) Removed from the state (name of state to which moved and date moved); or

(d) Stolen (date).

(11) All radio signaling systems put into use for the first time after the effective date of these safety standards, shall meet or exceed the minimum performance specifications contained in WAC 296-54-607 of these safety standards, and, when altered or repaired, shall continue to meet such specifications.

(12) Adjustments, repairs, or alterations of radio signaling and control devices must be done only by or under the immediate supervision and responsibility of a qualified and certified radio technician with factory training or equivalent certified experience. Anyone without the technical ability or the proper equipment to cause the signaling systems to function within required tolerances must not attempt to repair, alter, or adjust the systems.

(13) When interference, overlap, fadeout, or blackout of radio signals is encountered, the use of the device must be discontinued immediately. Use may not be resumed until the source of trouble has been detected and corrected.

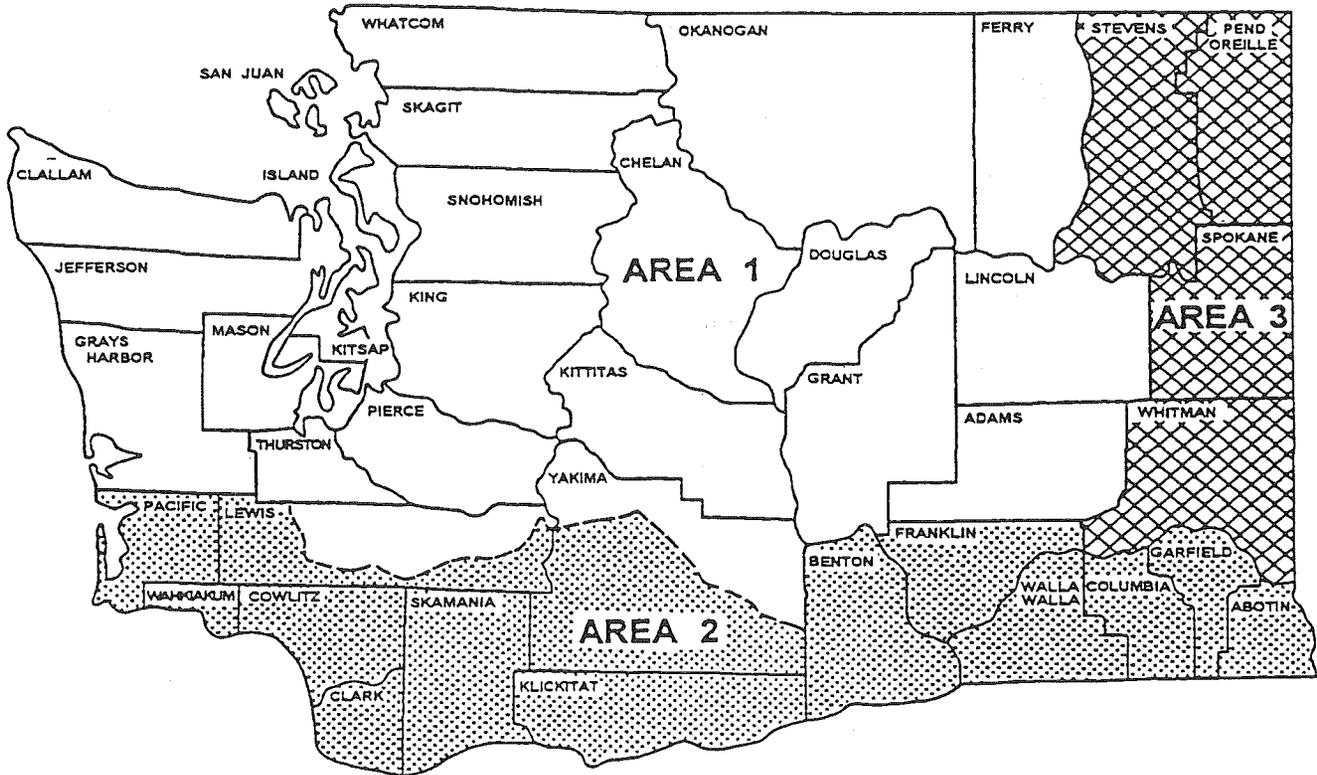
(14) Radio frequencies assigned to systems for which voice communications may be used to give signals to the yarder operator must not be the same frequencies as those assigned for whistle signals or machine control signals used in skyline, highlead, slackline, or cable skidder systems.

(15) When hazardous interference is created by moving a voice communication system into an area where a system is already in use on the same frequency, use of the newly-moved system must be immediately discontinued until the problem of interference has been corrected.

(16) Before moving any unit from one assigned geographical area to another (see area map, Figure 36: Areas for Use of Radio Signaling Systems for Logging Operations), the

owner must apply for and receive a new permit from the department.

AREAS FOR USE OF RADIO SIGNALING SYSTEMS FOR LOGGING OPERATIONS



STATE OF WASHINGTON
DEPARTMENT OF LABOR AND INDUSTRIES
DIVISION OF INDUSTRIAL SAFETY AND HEALTH

Figure 36: Areas for Use of Radio Signaling Systems for Logging Operations

Form No. 157.

STATE OF WASHINGTON

5-71

DEPARTMENT OF LABOR AND INDUSTRIES

DIVISION OF SAFETY

APPLICATION FOR PERMIT TO OPERATE RADIO SIGNAL SYSTEM IN DESIGNATED AREA

Radio Carrier Frequency Serial No.
Tone Coding Frequency Hz Name of Manufacturer of Signal System
Firm Name Address By
Intended Function of Unit: Voice communication [] Whistle signal [] Control Equipment []
Area in which Unit will be Operated: 1 [] 2 [] 3 []
Type of Tone: Sequential [] Simultaneous [] If other specify type
System to be Used For: Grapple [] Skyline, Highlead, Slackline, Skidder [] Balloon []
Date System Purchased or Acquired: Day Month Year
Date Application Mailed to Division of Safety/...../.....
Date Permit Issued/...../.....
DIV. OF SAFETY USE ONLY

Figure 37: Application for Permit to Operate Radio Signal System in Designated Area

Dept. of Labor & Industries
Div. of Consultation & Compliance
P.O. Box 44650
Olympia, WA. 98504-4650



RADIO PERMIT

TO OPERATE MULTI-TONE RADIO SIGNAL SYSTEM IN DESIGNATED AREA.

MODEL SERIAL
CARRIER FREQUENCY MHz
TONES Hz
AREA
FIRM NAME
ISSUED BY

F416-086-000 RADIO PERMIT 10-88

Figure 38: Radio Permit

A permit issued by the department of labor and industries shall be attached to the outside of the receiver which shall indicate the area in which the radio signaling equipment may be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-605, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-605, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW.

[2000 WAC Supp—page 1054]

88-23-054 (Order 88-25), § 296-54-605, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-605, filed 9/21/79.]

WAC 296-54-607 Radio signal systems—Specifications and test procedures. All radio-signaling systems put into use must meet or exceed the requirements of this section. When systems are altered or repaired they must continue to meet these requirements.

(1) Radio equipment in use at cable logging sites, which is primarily used for voice communication, must be on a separately assigned frequency from radio equipment primarily used to initiate whistles or other audible signaling devices or to control any machine, material handling device or other equipment hazardous to employees.

(2) Radio-signaling systems used to transmit whistle signals or control functions of equipment associated with skyline, highlead, slackline, or cable skidder systems of logging must transmit and decode only by the use of authorized multitone frequencies. Only sequential tones may be used to transmit signals or control equipment when using carrier frequencies of 154.57 or 154.60 MHz.

(3) All radio systems receiver sensitivity must be able to attain 0.4 microvolt, or greater, for 12 dB SINAD ratio for VHF frequencies and 0.5 microvolt, or greater, for UHF frequencies. When interference is a factor, the receiver may be desensitized in the furtherance of safety by a person qualified according to WAC 296-54-605(12).

(4) All radio signal systems must have receiver spurious attenuation of at least 70 dB when measured by the 20 db qui-

eting method and image response attenuation of 60 db when measured by the 20 db quieting method. "Spurious response attenuation" is a measure of the receiver's ability to discriminate between a desired signal to which it is resonant and an undesired signal at any other frequency to which it is also responsive.

(5) All radio signal systems must have receiver selectivity of at least 80 db plus or minus 30 KHz, when measured by the E.*I.A. SINAD method.

(6) The receiver-decoder tone frequency stability must not exceed 0.006 (0.6%) above or below the assigned tone frequency.

(7) The drift of a transmitter-encoder tone must not exceed 0.006 (0.6%) above or below the assigned tone frequency.

(8) Parts of the radio-signaling system affected by moisture, which may be subjected to the entrance of moisture during use, must be weatherproofed. Transmitters must be tested within fifteen minutes after being subjected to the following conditions and must have the ability to continue functioning properly. The transmitter and receiver must be placed in a humidity chamber for eight hours where the humidity has been maintained at not less than ninety percent and where a 40 degrees C. temperature has been maintained.

(9) Radio-signaling system units must operate within tolerances specified at any temperature within the range of -30 degrees C. to +60 degrees C.

(10) Switches of transmitters used to send whistle signals or activate equipment associated with high lead, slackline, or cable skidder systems of logging must be designed so that two buttons, motions or a combination of these are required simultaneously to cause activation of the system. Arrangement of the activating switches must allow the operator to transmit signals easily but not easily activate a control or command function accidentally.

(11) All receivers intended to be mounted on or in the yarder or similar equipment, and all portable transmitters, must continue to maintain specified mechanical and electrical performance during and after being subjected to vibration of the magnitude and amplitude as follows:

(a) The equipment must be vibrated with simple harmonic motion having an amplitude of 0.015" (total excursion 0.03") with the frequency varied uniformly between 10 and 30 Hz and an amplitude of 0.0075" (total excursion 0.015") with the frequency varied uniformly between 30 and 60 Hz.

(b) The entire cycle of frequencies for each group (i.e., 10 to 30 cycles and 30 to 60 cycles) must be accomplished in five minutes and repeated three times.

(c) The above motion must be applied for a total of thirty minutes in each direction, that is, the directions parallel to both axes of the base and perpendicular to the plane of the base.

(12) All portable transmitters must be able to maintain specified mechanical and electrical performance after being subjected to a shock test as follows: The transmitter shall be dropped five times from a height of four feet onto a smooth concrete floor. Each drop must impact a different surface of the transmitter.

(13) Transmitters operating on carrier frequencies of 154.57 MHz and on 154.60 MHz must be limited on maxi-

mum power output of 500 mW measured at the antenna terminals.

(14) To minimize the possibility of interference with other signaling systems, the input power of transmitters operating in the 450 MHz range should be limited to only the amount needed to transmit to the receiver of the system effectively.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-607, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-607, filed 9/21/79.]

WAC 296-54-701 Wood spar trees. (1) Wood spar trees must be of sound material of sufficient size and strength to withstand any stresses which may be imposed by any equipment used for that specific logging operation.

(2) The top of the tree must extend not more than:

(a) Sixteen feet above the top guylines on spar trees over fifty feet tall; and

(b) Eight feet above the top guylines on spar trees less than fifty feet tall.

(3) School marms used as spar trees must be topped at the forks. Spar trees, except cedar, must be barked where guylines, straps, bull blocks, and tree plates are placed.

(4) Spar trees must be topped and limbs must be cut off close so that running lines will not foul or saw on protruding knots.

(5) At least four tree plates must be placed under top guylines on spar trees over fifty feet tall. At least three tree plates must be used on spar trees less than fifty feet tall.

(6) Tree plates must be equipped with lugs or other suitable means to hold them in place.

(7) Before raising spar trees, dummy trees must be topped and guyed with three guylines equivalent in breaking strength to the mainline.

(8) When spar trees are raised, stumps used for snubbing must be properly notched. Guylines must be held by a mechanical means. Snubbing by hand is prohibited.

(9) All rub trees must be limbed and topped.

(10) Loose material such as bark, spikes, straps or chains not in use and slabs caused by bumping logs or chafing straps must be removed from the spar trees. Heavy bark must be removed from trees used for a permanent installation.

(11) A person must ride only the passline to thread lines, to lubricate blocks, or to inspect rigging.

(12) When the friction lever and passline drum are on the opposite side of the machine from the operator, an experienced person must operate the friction lever while the engineer operates the throttle. While being used, the passline drum must be properly attended by another person to guide the passline onto the passline drum with a tool suitable for the purpose.

(13) Using a gypsy drum to handle employees in the tree is prohibited.

(14) A climber's rope must encircle the tree before the climber leaves the ground, except when the climber is riding the passline.

(15) Spikes, used by the climber as a temporary aid in hanging rigging, must be removed before the tree is used for logging.

(16) Topping trees in windy weather is prohibited.

(17) Topping, rigging-up, or stripping is prohibited when visibility is impaired.

(18) When heel tackle is fastened near the machine, a safety line must be placed in such manner that in case of breakage, lines do not strike the power unit and endanger the operator.

(19) Yarding with more than one unit on any one head spar is prohibited.

(20) The angle between the power unit, the high lead block, and the mainline road must not exceed a square lead on rigged spars. When using portable spars or towers, the location of the machine or position of the operator must ensure that the operator is not endangered by incoming logs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-701, filed 8/18/99, effective 12/1/99.]

WAC 296-54-70110 Wood spar trees—Guylines. (1)

Wood spar trees using a line greater than 7/8-inch and used as loading and yarding trees must have at least six top guys and four buckle guys, if a sail guy is used.

(2) Wood spar trees using a mainline greater than 7/8-inch and used only as yarding trees must have at least six top guys and must use at least three buckle guys.

(3) Wood spar trees using a mainline of 7/8-inch or less must be supported by at least five top guylines or other positive means of supporting the spar.

(4) Wood spar trees used for yarding with light equipment (7/8-inch or smaller mainline) must be guyed so that strains will be imposed on at least two guylines. If less than five top guys are used, guylines must be at least 1/4-inch larger than the mainline.

(5) Wood spar trees used for loading only with crotch line, spreader bar, or swinging boom must have at least four top guys and must use at least three buckle guys.

(6) More guylines must be added if there is any doubt about the stability of a spar tree, raised tree, tail tree, lift tree, or other equipment or rigging they support.

(7) Wood spar trees used for transfer must have at least five top guys and must use at least three buckle guys.

(8) Guylines must alternately be passed around the wood spar in opposite directions to prevent twisting of the spar.

(9) Guylines must be attached to the upper portion of the wood spar by shackles.

(10) When a high lead block is hung below buckle guys, at least three top guys of equal strength to the mainline must be used to keep the top from swaying.

(11) When buckle guys are required, they must be installed on the tree where they will provide the maximum effectiveness.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-70110, filed 8/18/99, effective 12/1/99.]

WAC 296-54-70120 Wood spar trees—Passlines. All spar trees must be equipped with passlines that are:

(1) At least 5/16-inch and a maximum of 1/2-inch in diameter;

(2) Not subjected to sawing on other lines or rigging, and are kept clear of all moving lines and rigging;

[2000 WAC Supp—page 1056]

(3) A continuous length and in good condition with no splices, knots, molles, or eye-to-eye splices between the ends; and

(4) Long enough to provide three wraps on the drum before the climber leaves the ground.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-70120, filed 8/18/99, effective 12/1/99.]

WAC 296-54-70130 Wood spar trees—Straps. (1)

Safety straps of appropriate size must be placed on all high lead blocks; and other blocks whenever practicable. Safety straps must be shackled (with the closed end of the shackle up) to a guyline that extends as near as possible at right angles with the power unit, but must not be on a guyline with an extension within one hundred feet of the tree. When the top guyline on which the safety strap of the high lead block is fastened is changed, the safety strap must be attached to another guyline or the loosened guyline must be tightened after the change.

(2) All tree straps must be at least 1/4-inch larger than the pulling line. If impossible to use a safety strap, all tree straps must be 1/2-inch larger than the pulling line.

(3) Lead blocks used for yarding, swinging, loading, and unloading used in wood spars must be:

(a) Designed and constructed for this purpose;

(b) Bolted with at least two bolts through the shells below the sheaves in a manner that will retain the sheave and line in case of bearing pin failure (this does not apply to haul-back lead blocks); and

(c) Mainline blocks have a sheave diameter of at least twenty times the diameter of the mainline.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-70130, filed 8/18/99, effective 12/1/99.]

WAC 296-54-705 Truck and equipment maintenance shops. It is recognized that the usual hazards encountered in maintenance shops performing work on logging and related equipment would be very similar to those found in general repair, machine or welding shops; therefore, the rules contained in chapter 296-24 WAC, General safety and health standards and other applicable safety standards promulgated and administered by the department of labor and industries shall apply to such places of work.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-705, filed 8/18/99, effective 12/1/99.]

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-705, filed 8/18/99, effective 12/1/99.]

WAC 296-54-707 Labor camps. Temporary labor camps for logging operations must meet the requirements of WAC 296-24-125.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-707, filed 8/18/99, effective 12/1/99.]

WAC 296-54-99002 Appendix 1—Signals.

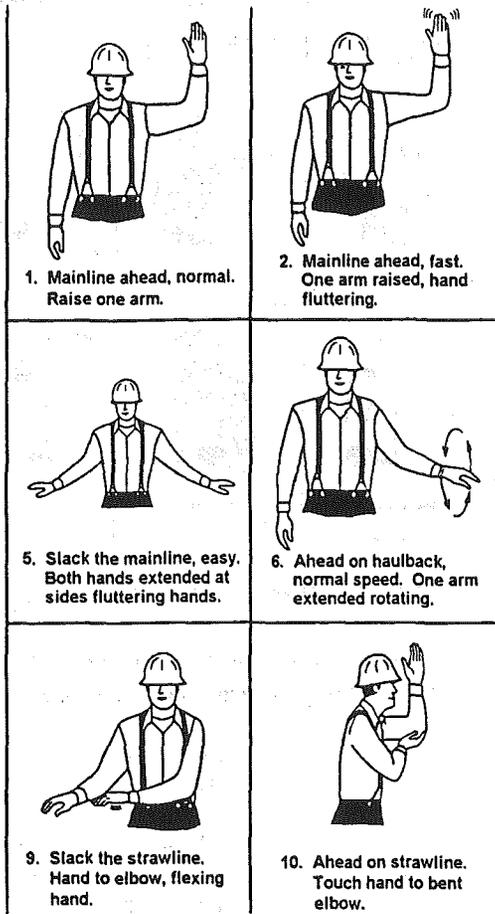


Figure 39: Standard Hand Signals

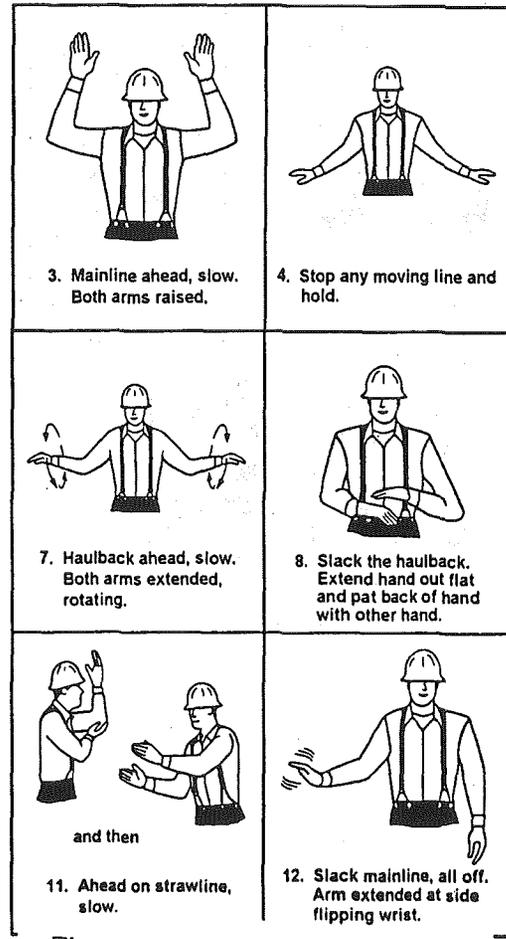


Figure 40: Standard Hand Signals

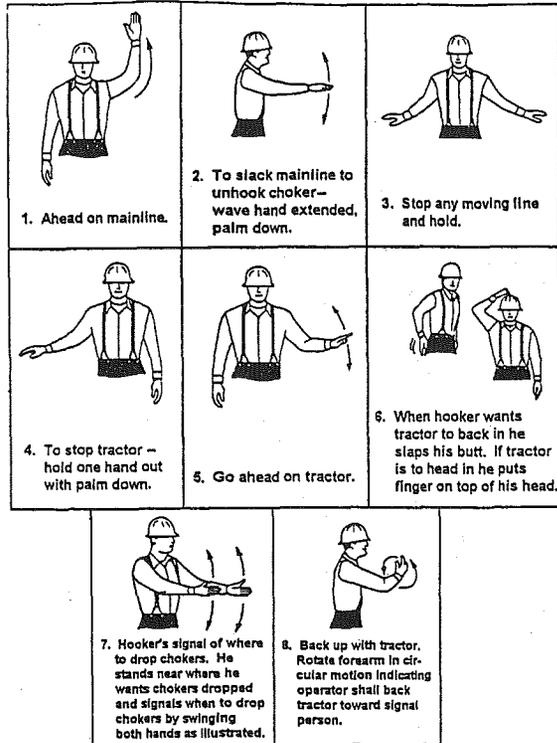


Figure 41: Standard Hand Signals

STANDARD SIGNALS FOR LOADING LOGS



Figure 42: Standard Signals for Loading Logs

HIGH LEAD LOGGING WHISTLE SIGNALS

- Means longer spacing between signals.

- | | |
|---|--|
| 1 short | Stop all lines. |
| 3 short-3 short | Ahead slow on mainline. |
| 3 short | Ahead on mainline. |
| 2 short | Ahead on haulback. |
| 2 short-2 short | Ahead slow on haulback. |
| 3 short-1 short | Ahead on strawline. |
| 3 short-1 short-3 short | Ahead slow on strawline. |
| 4 short or more | Slack mainline. |
| 2 short-4 short | Slack haulback. |
| 3 short-1 short-4 short | Slack strawline. |
| 3 short-2 short | Standing tight line. |
| 1 short-1 short | Tight line while lines are running, or break if running tight. |
| 3 short | When rigging is in: Strawline back on haulback. |
| 3 short / plus "X" number of shorts | When rigging is in: Indicates number of sections of strawline back on rigging. |
| 3 short-1 short-2 short | Strawline back on rigging. |
| 1 short | When rigging is in: Chaser inspect and repair rigging. |
| 2 short | When rigging is in: No chokers back. |
| 2 short-1 short / plus "X" number of shorts | Number of chokers back. |

HIGH LEAD LOGGING WHISTLE SIGNALS

- Means longer spacing between signals.

2 short-4 short	When rigging is in: Slack haulback-hold all lines until 2 short blown.
3 medium	Hooker.
3 medium-4 short	Hooker and that crew.
5 long	Climber.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured, call transportation and stretcher.
1 long-1 short repeated	Fire.
Grabinski system	
2 short-1 short	Slack mainline and haulback together.
2 long	Take off or put on rider block.

SKIDDER WHISTLE SIGNALS

- Means longer spacing between signals.

5 medium-4 short	Tail or second rigger and that crew.
2 medium	Skidder head rigger.
3 medium-4 short	Hooker and that crew.
2 long	Ahead on transfer.
2 long-4 short	Slack transfer.
1 short-3 short	Ahead on carriage with slack puller line.
1 long	Ahead on strawline.
1 long-4 short	Slack strawline.
1 long-3 short	Ahead easy on strawline.
5 long	Climber.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured, call transportation and stretcher.
1 long-1 short repeated	Fire.

SKIDDER WHISTLE SIGNALS

- Means longer spacing between signals.

1 short	Stops moving carriage-stops or goes ahead on slack puller, as case may be, if carriage is stopped.
2 short	Go ahead on skidding line holding carriage.
1 short-2 short	Pick up skidding line, easy.
2 short-1 short	Shake up carriage to clear choker.
2 short-2 short	Ahead on receding line.
3 short	Ahead on carriage, holding at present level, using interlock.
3 short-3 short	Ahead easy on skidding line.
2 short-2 short-2 short	Slack skyline, cable down.
2 short-2 short-2 short-1 short	Pick up skyline, cable up.
2 short-2 short-4 short	Slack receding line.
2 short-4 short	Slack skidding line.
2 short-2 short-1 short	Tighten all lines.
1 short-4 short	Slack off slack puller.
1 short-2 short	Pick up slack puller when slack.
2 short-2 short / plus "X" number of shorts	When carriage is in: Number of chokers wanted.
2 short-2 short-1 long	Bull choker.
1 short	When carriage is in: Inspect butt rigging.
2 short-4 short / 1 short	For each additional ten feet of tong line.
1 long / plus "X" number of shorts	Number of coils of strawline wanted.
5 medium	Tail or second rigger.

SLACKLINE WHISTLE SIGNALS

- Means longer spacing between signals.

2 short-2 short-2 short-1 short	First cable up when road has been changed and tail hold made fast.
2 short-2 short-2 short	Drop skyline.
1 short	Stop any moving line.
1 long	When logging, slack skyline.
2 short	Ahead on skyline.
1 long-2 short	Ahead easy on skyline.
3 short	Ahead on skidding line, holding haulback.
3 short-3 short	Ahead easy on skidding line with slack haulback.
4 short	Slack skidding line.
2 short-2 short / 2 short-2 short	Ahead easy on haulback with slack skidding line.
2 short-2 short	Ahead on haulback.
2 short-2 short-4 short	Slack haulback.
2 short / 3 short	Pick up skyline and skid.
2 short / 2 short-2 short	Pick up skyline and skin.
3 short-1 short	When carriage is in: Strawline back on haulback.
3 short-1 short-2 short	When carriage is in: Strawline back on carriage.
3 short-1 short	When strawline is out: Ahead on strawline.
3 short-2 short	Tight line.
3 short-1 short-4 short	Slack strawline.
3 short-1 short-3 short	Pull easy on strawline.
2 long	Ahead on transfer.
2 long-4 short	Slack transfer.
2 long-2 short-2 short	When carriage is in: Transfer back on carriage.
1 long / plus "X" number of shorts	When carriage is in: Number of coils.

SLACKLINE WHISTLE SIGNALS
 - Means longer spacing between signals.

2 short-2 short-1 short /plus "X" number of shorts 1 short	When carriage is in: Number of chokers. When carriage is in: Inspect rigging, repair and send back.
2 short-2 short-4 short	When carriage is in: Slack haulback and hold all lines until 1 short is blown-then send back.
3 short-3 short	When carriage is in: Send back powder.
5 medium	Tail rigger.
5 medium-4 short	Tail rigger and that crew.
3 medium	Head hooker.
3 medium-4 short	Second hooker and that crew.
5 long	Climber.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured, call transportation and stretcher.
1 long-1 short repeated	Fire.

RUNNING SKYLINE WHISTLE SIGNALS
 - Means longer spacing between signals.

1 short	Stop all moving lines.
2 short	Skin carriage back.
2 short-1 short	Slack haulback.
2 short-2 short	Skin carriage easy.
2 short-3 short	Standing tight line.
1 short-2 short	Ahead on drop line.
4 short	Slack drop line.
1 short-4 short	Slack both mainlines.
1 short-1 short	Stop drop line going up and move carriage forward.
3 short	Move carriage forward.
3 short-3 short	Move carriage forward easy.
3 short-1 short	When strawline is out: Ahead on strawline.
3 short-1 short-4 short	Slack strawline.
3 short	When carriage is in: Strawline.
3 short-X short	When carriage is in: Number sections.
3 short-1 short-2 short	When carriage is in: Strawline back on carriage.
2 short-X short	When carriage is in: Number of chokers.
4 short	When carriage is in: Inspect rigging, repair and send back.
1 short	When carriage is in: Hold all lines until 2 shorts, then send back.

RUNNING SKYLINE WHISTLE SIGNALS
 - Means longer spacing between signals.

3 medium	Head hooker.
3 medium-4 short	Hooker and that crew.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured; call transportation and stretcher.
1 long-1 short (repeated)	Fire.
3 short-1 long	Acknowledged by engineer to signify hazardous turn.

TENSION SYSTEM SIGNALS

4	Release tension.
1 short	Stop carriage and start unspooling tong line.
1 short	Stop tong line.
1 short	Resume unspooling tong line.
1 short	Will stop any moving line or slack tong line when carriage is stopped.
2 short-2 short	Go into interlock and go back.
2 short-4 short	Slack haulback and let carriage down.
After turn is set 2 short	Go ahead on tong line.
2 short-3 short	Go ahead easy on tong line.
3 short	Go into interlock and take carriage to landing.
3 short-3 short	Ahead on carriage easy.
1 short-2 short	Increase tension on tong line when carriage is going in.
short-1 short	Decrease tension on tong line when carriage is going in.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99002, filed 8/18/99, effective 12/1/99; Order 72-14, Figure 2 (codified as WAC 296-54-99002), filed 7/31/72, effective 9/1/72.]

WAC 296-54-99003 Appendix 2—Sample minimum lockout/tagout procedure. (Company Name) has established this lockout/tagout program to provide protection for employees performing maintenance or servicing of logging equipment.

Before any employee begins maintenance or servicing of equipment where the unexpected energizing, start-up, or release of stored energy could cause injury, the equipment must be shut down, isolated from all potentially hazardous energy and locked or tagged out.

Employees must not start, attempt to start, energize or use equipment that has been locked or tagged out. Tags and/or padlocks will be provided for tagging and/or locking out logging machinery and will be durable enough to withstand the environment. Tags will contain a legend such as: "Do Not Start" or "Do Not Operate." When tagout is used, tags must be located in a position that will be obvious to any-

one attempting to operate the machinery. In lockout, padlocks are commonly used to prevent access to ignition/master switches or battery disconnects.

Employees performing maintenance or servicing must determine which sources of hazardous energy must be disabled for a particular job. The following are examples of hazardous stored energy found on logging equipment:

- Equipment
- Hydraulic or pneumatic pressure
- Mechanical (rotating saws, springs, shafts, gears, etc.)
- Gravity (elevated blades, booms, grapples, saw heads, etc.)

The following steps must be followed for lockout/tagout:

- Ensure that the brakes, swing locks, etc. are applied.
- Place the transmission in the manufacturer's specified park position.
- Lower or secure each moving element such as, but not limited to, blades, booms, grapples, buckets, saws, and shears to prevent a release of stored energy.
- Shut down machinery, and ensure that a responsible person removes and keeps the ignition/master key.
- Engage hydraulic safety locks when applicable.
- Before working on hydraulic or air systems, relieve pressure by bleeding tanks or lines and operate controls to dissipate residual stored energy (pressure).
- Place lockout and/or tagout device.

Before lockout or tagout devices are removed and machinery is started, inspect the work area to ensure all tools have been removed, guards are replaced, and employees are in the clear.

We will provide training to ensure that the purpose and function of the lockout/tagout program are understood by employees performing maintenance or repair of equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99003, filed 8/18/99, effective 12/1/99; Order 72-14, Figure 3 (codified as WAC 296-54-99003), filed 7/31/72, effective 9/1/72.]

WAC 296-54-99004 Appendix 3—Industry consensus standards.

American Society of Mechanical Engineers
ASME
345 East 47th Street
New York, NY 10017
(212) 591-7000

Society of Automotive Engineers, Incorporated
SAE
400 Commonwealth Drive
Warrendale, PA 15096-0001
(412) 776-4841

American National Standards Institute
11 West 42nd Street
New York, NY 10036
(212) 642-4900

Occupational Safety and Health Administration's Office
of Publications
OSHA
Room N 3101, 200 Constitution Avenue Northwest
Washington, DC 20210

(202) 219-4667

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99004, filed 8/18/99, effective 12/1/99; Order 72-14, Figure 4 (codified as WAC 296-54-99004), filed 7/31/72, effective 9/1/72.]

WAC 296-54-99007 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-54-99008 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-54-99009 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-54-99010 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-54-99013 Appendix 4—Various types of cable logging systems.

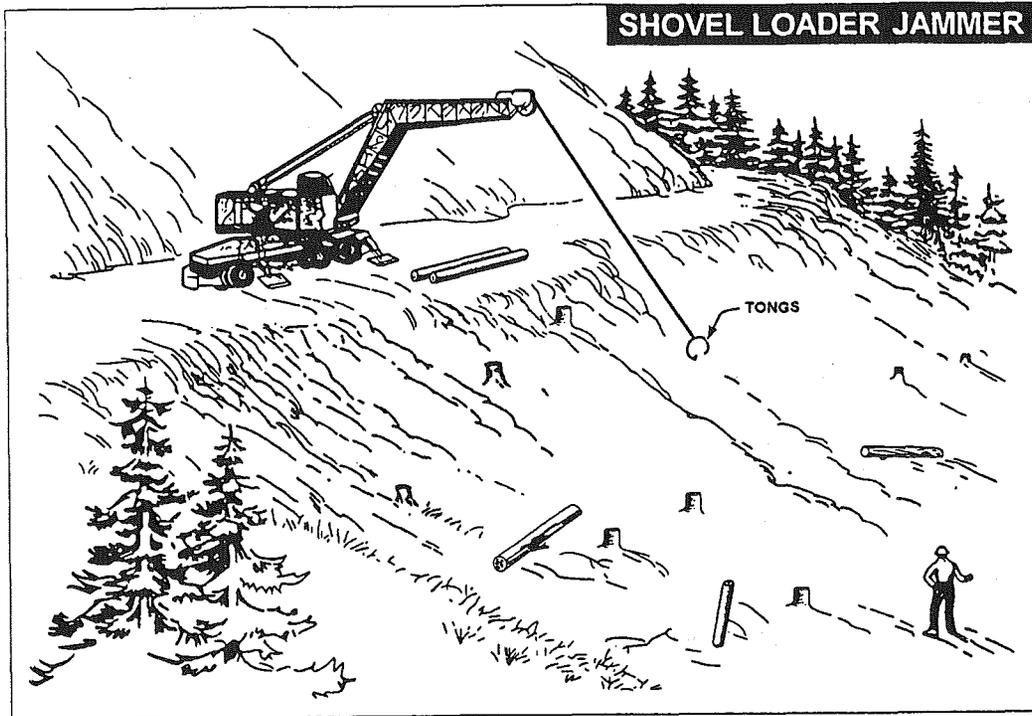


Figure 43: Shovel Load Jammer

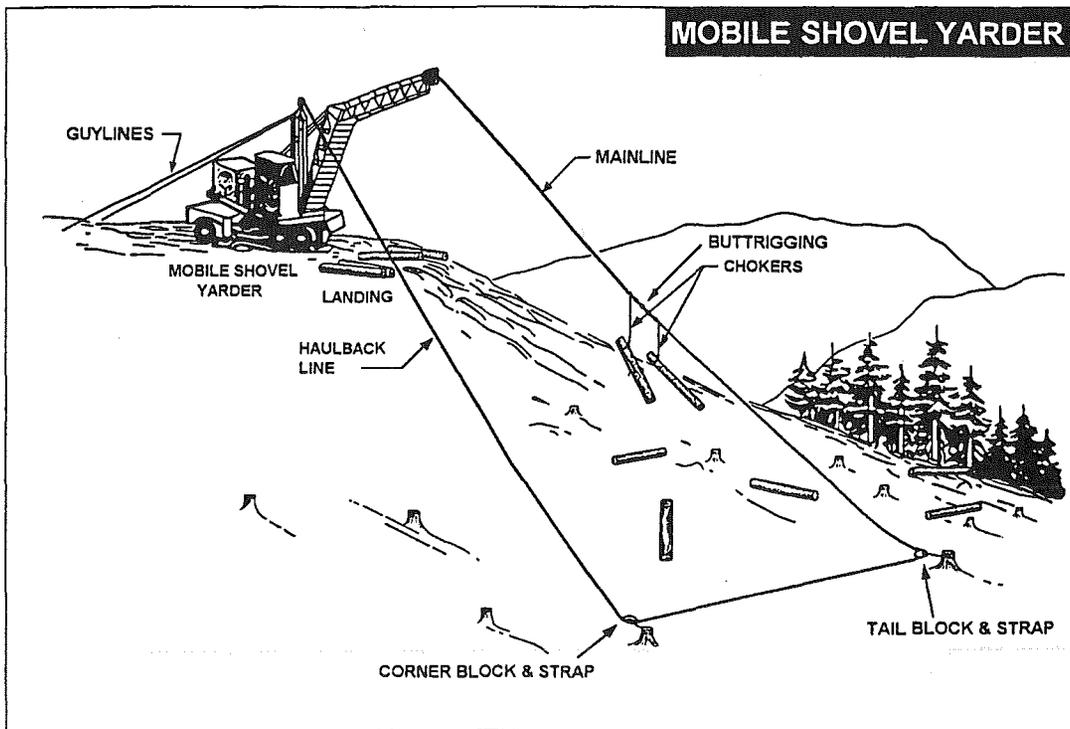


Figure 44: Mobile Shovel Yarder

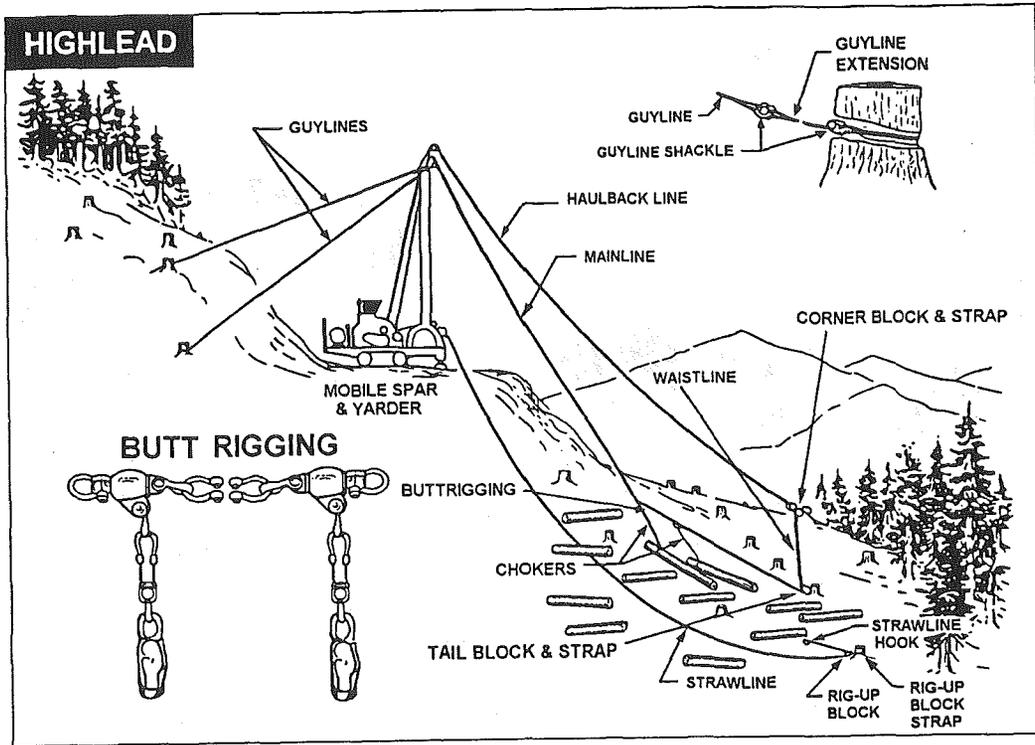


Figure 45: Highlead

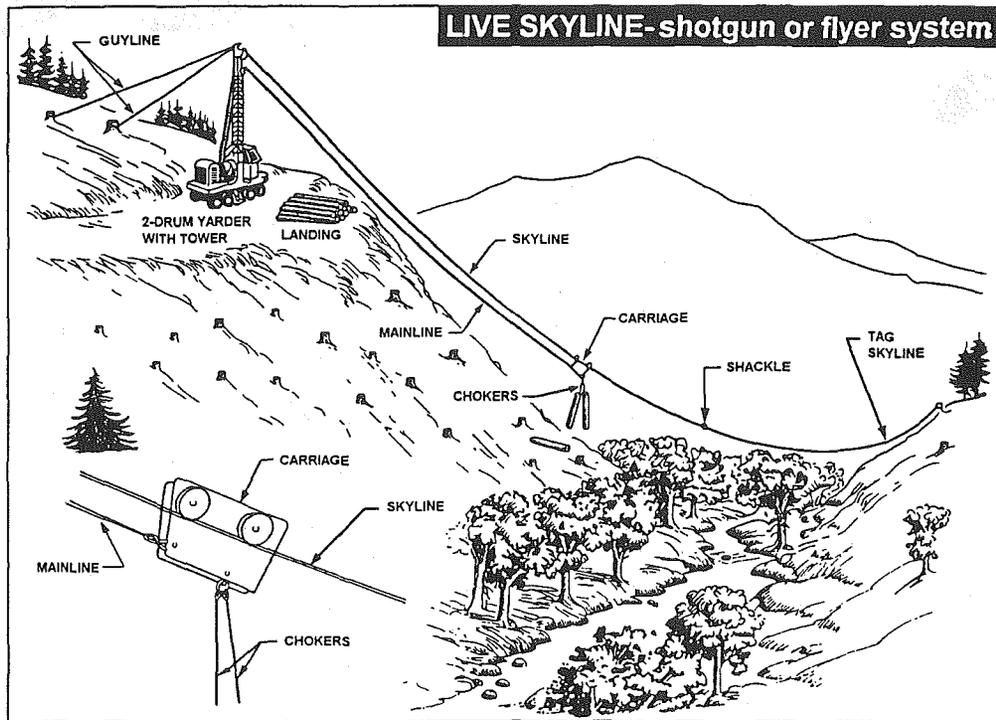


Figure 46: Live Skyline – Shotgun or Flyer System

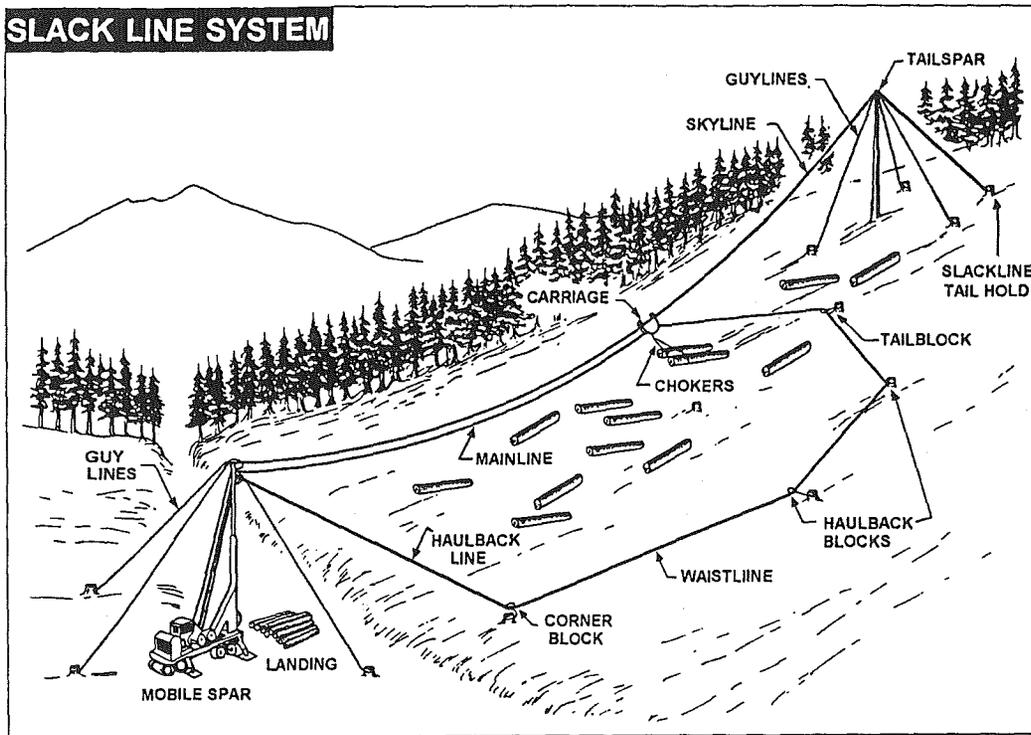


Figure 47: Slack Line System

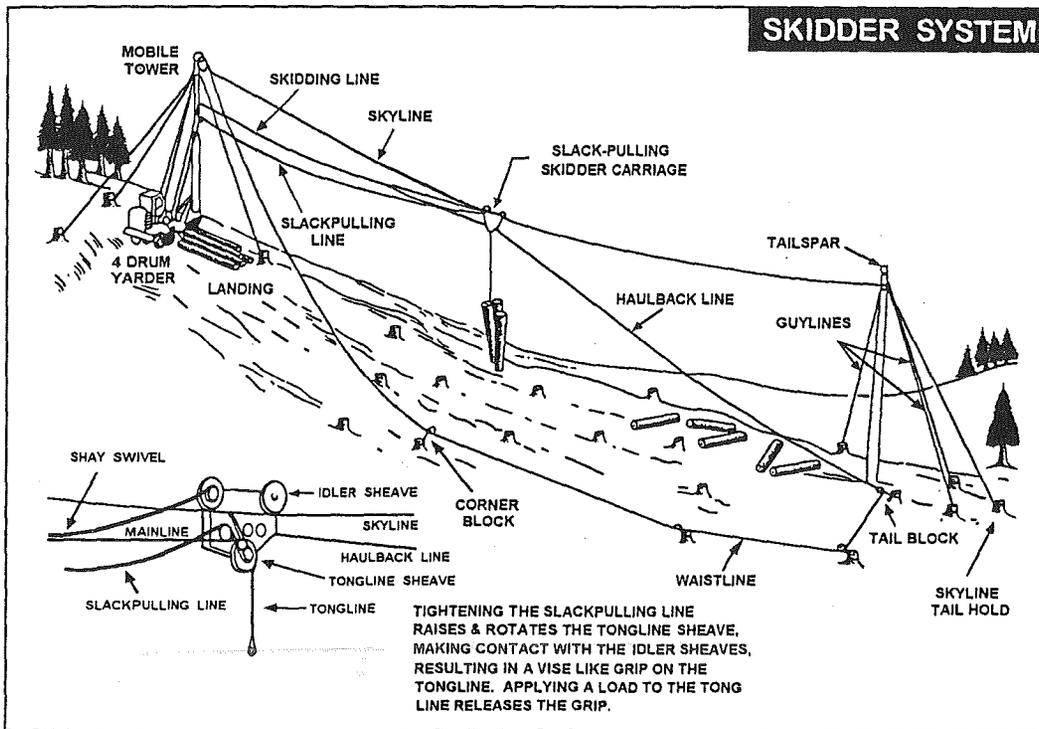


Figure 48: Skidder System

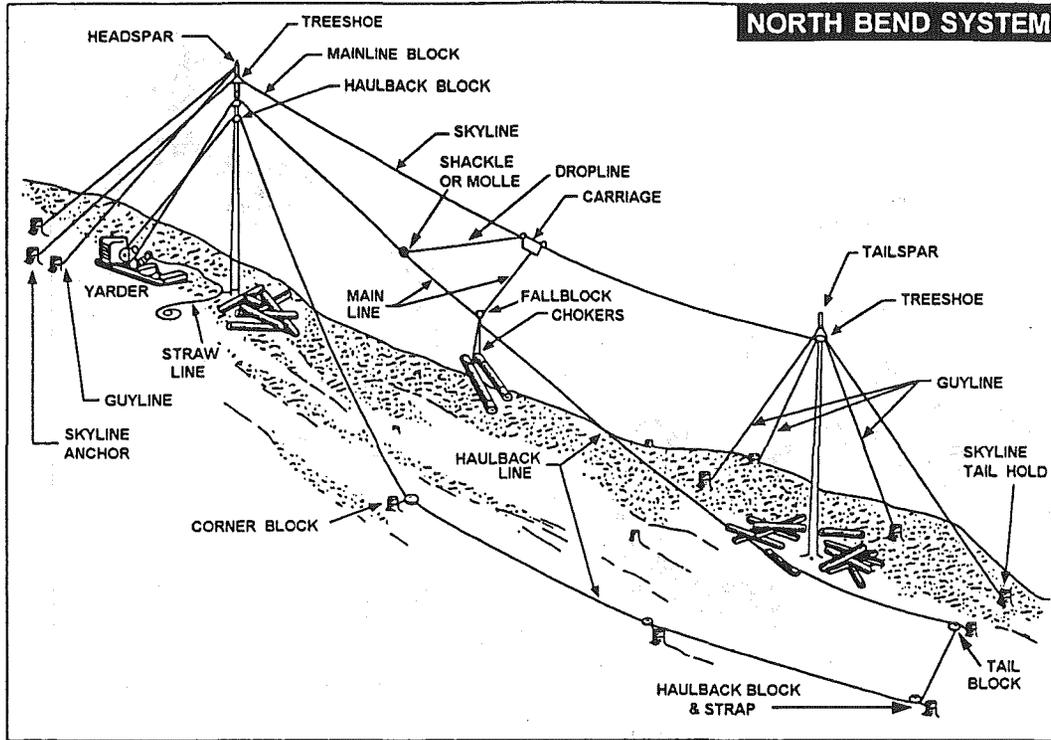


Figure 49: North Bend System

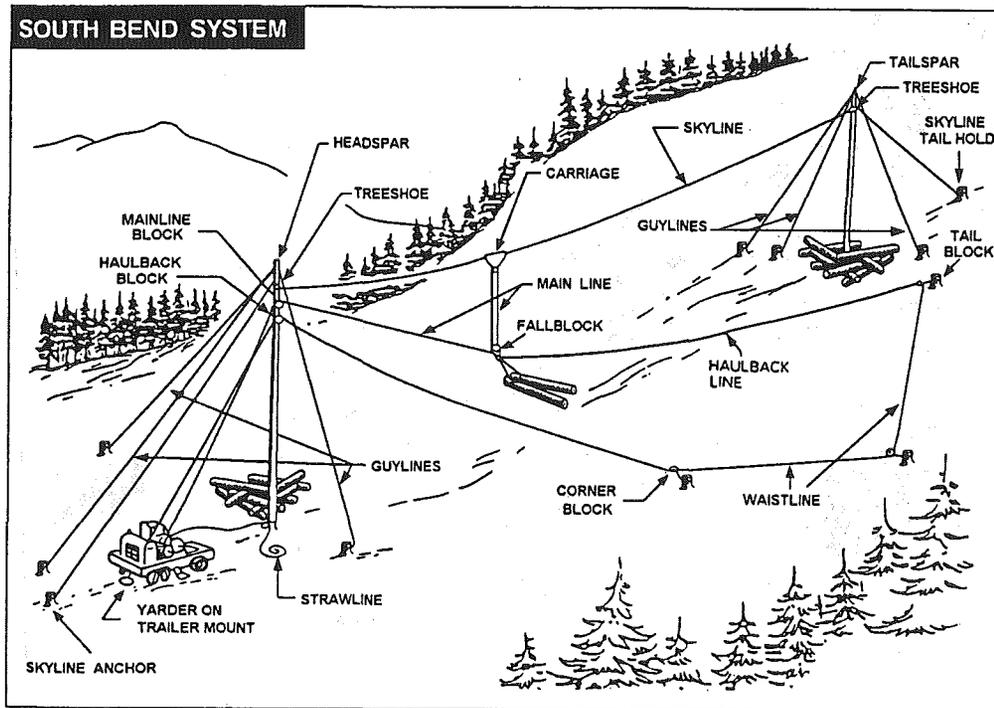


Figure 50: South Bend System

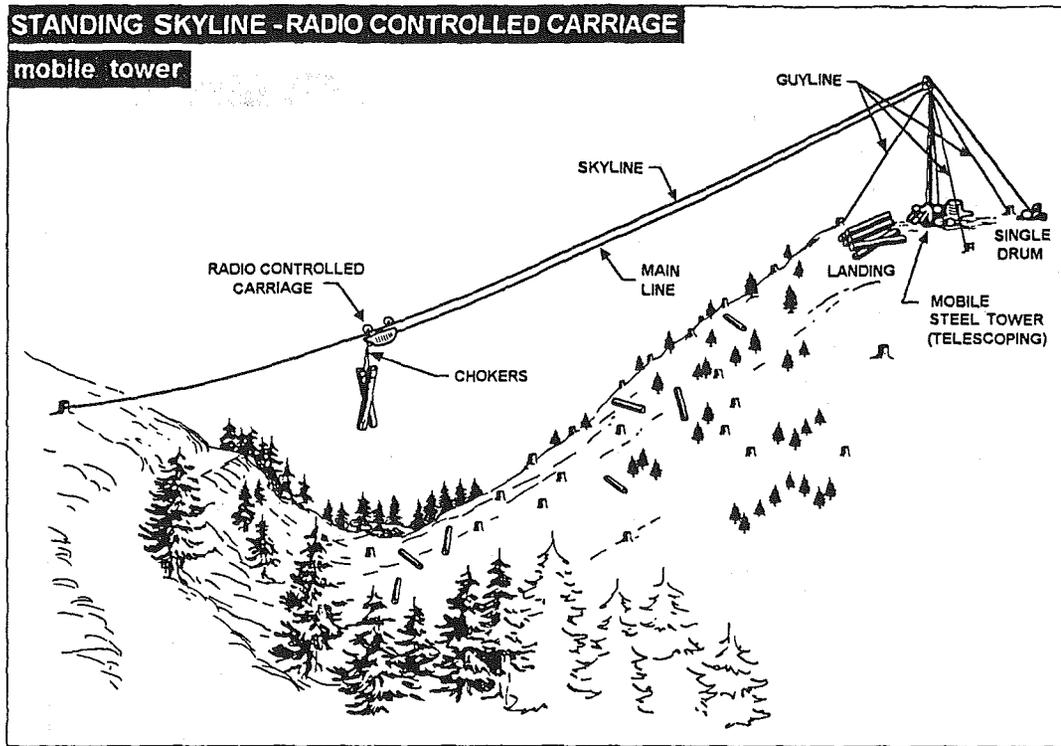


Figure 51: Standing Skyline – Radio Controlled Carriage – Mobile Tower

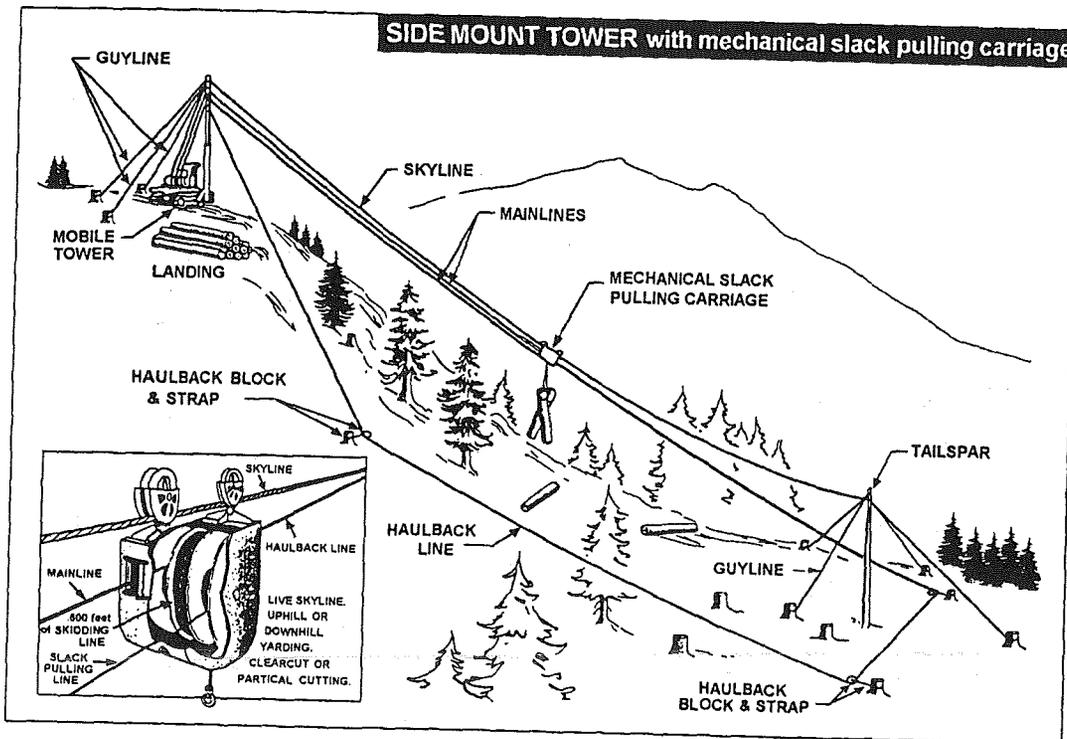


Figure 52: Side Mount Tower with Mechanical Slack Pulling Carriage

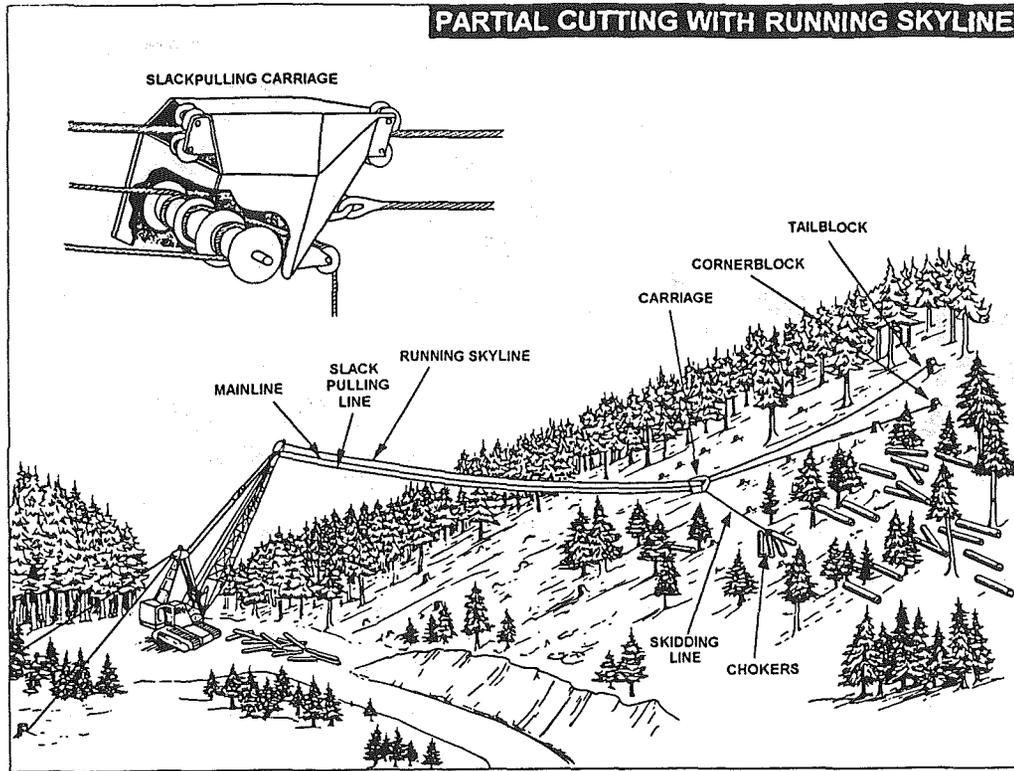


Figure 53: Partial Cutting with Running Skyline

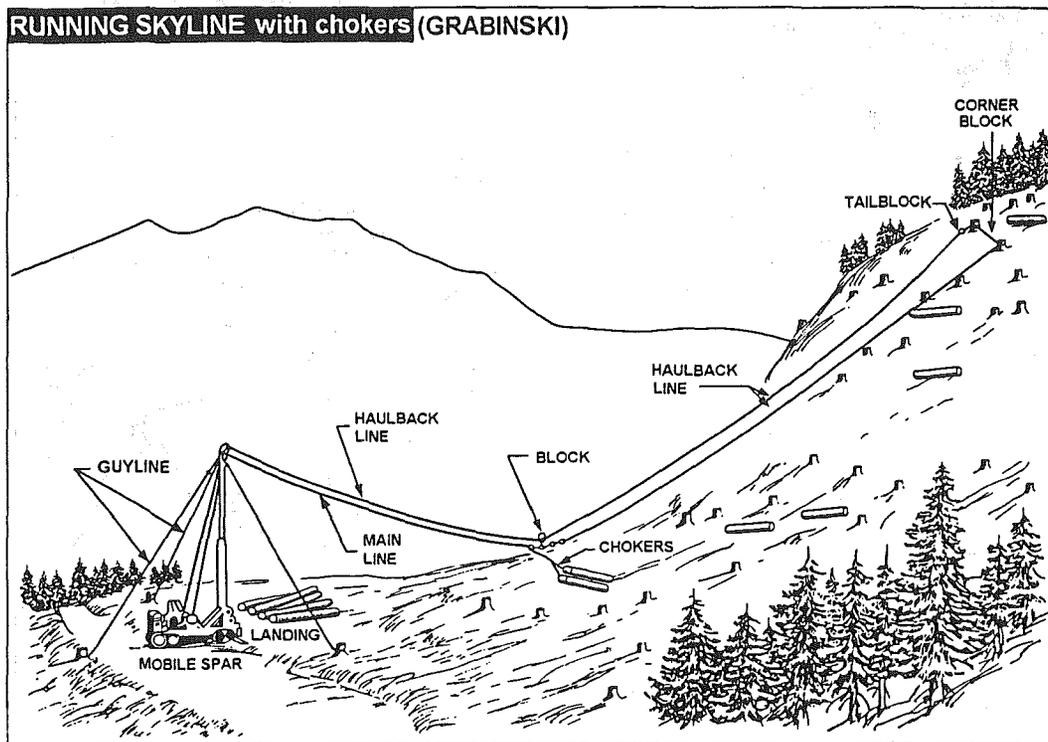


Figure 54: Running Skyline with Chokers (Grabinski)

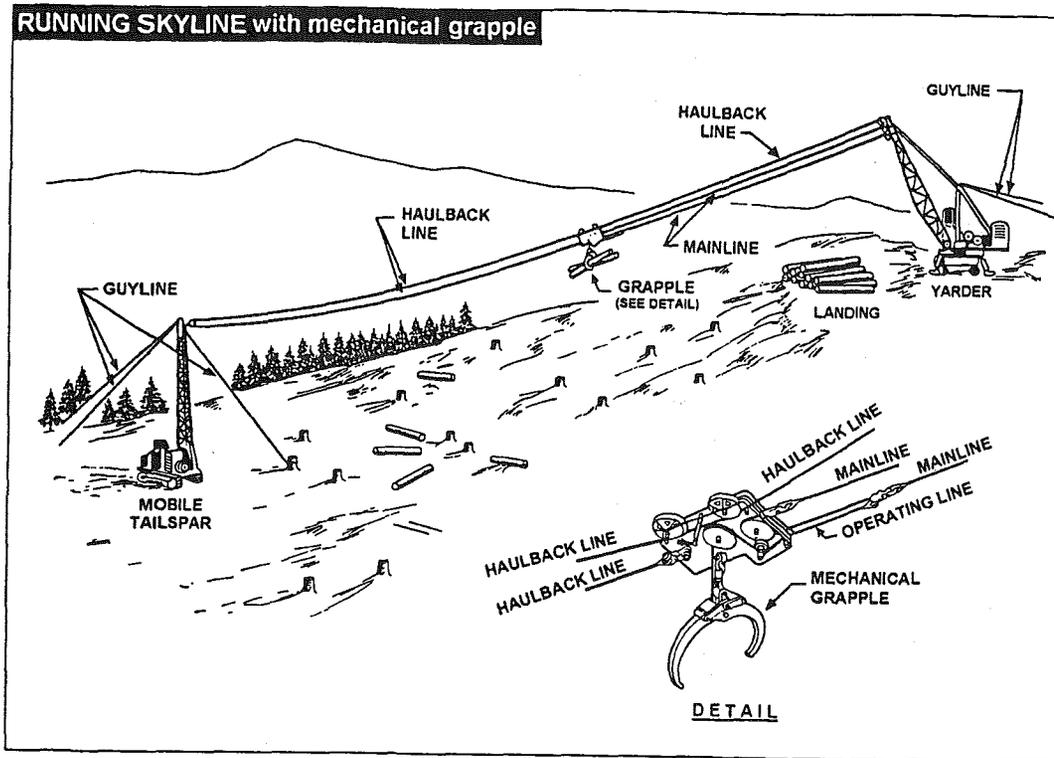


Figure 55: Running Skyline with Mechanical Grapple

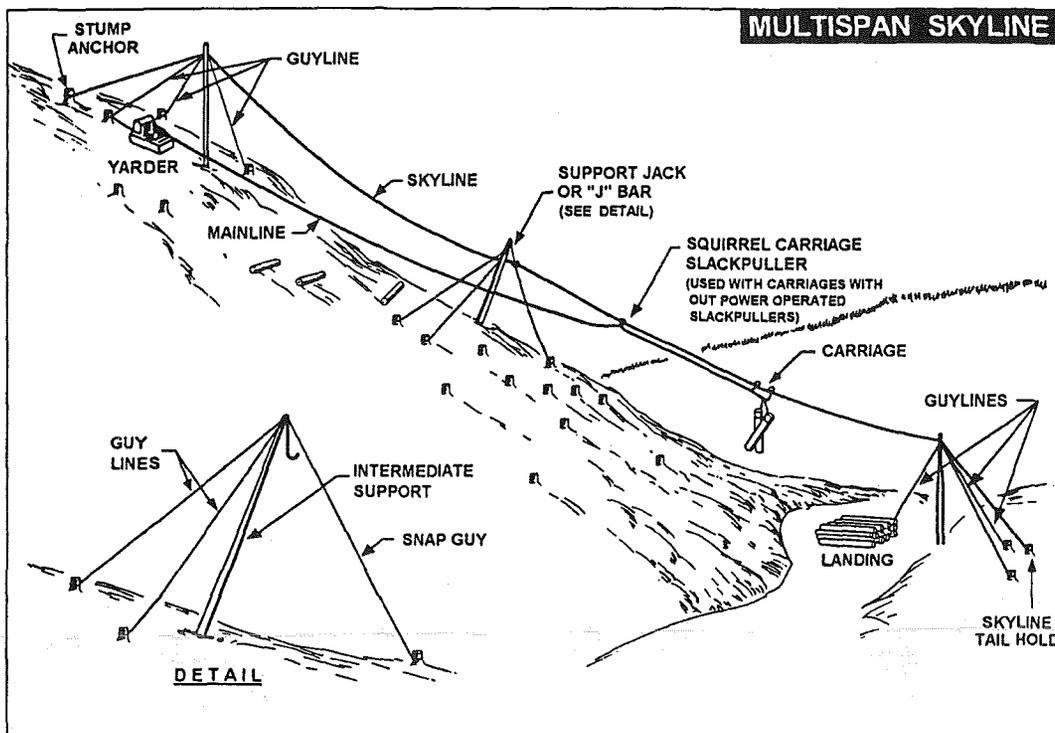


Figure 56: Multi-span Skyline

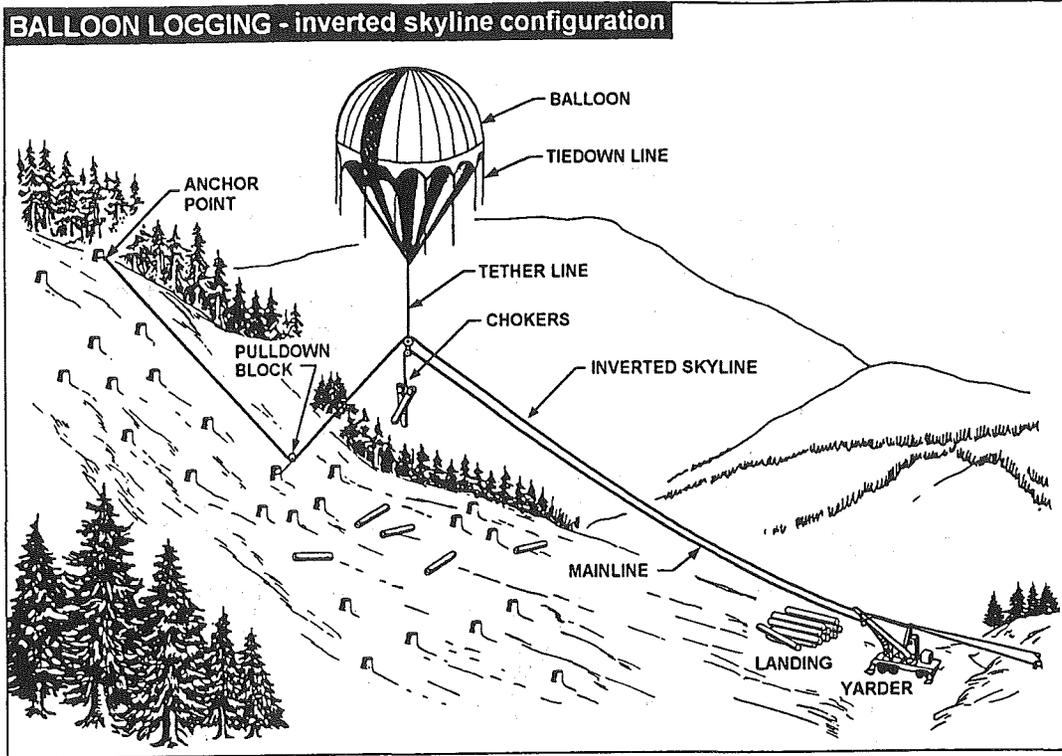


Figure 57: Balloon Logging – Inverted Skyline Configuration

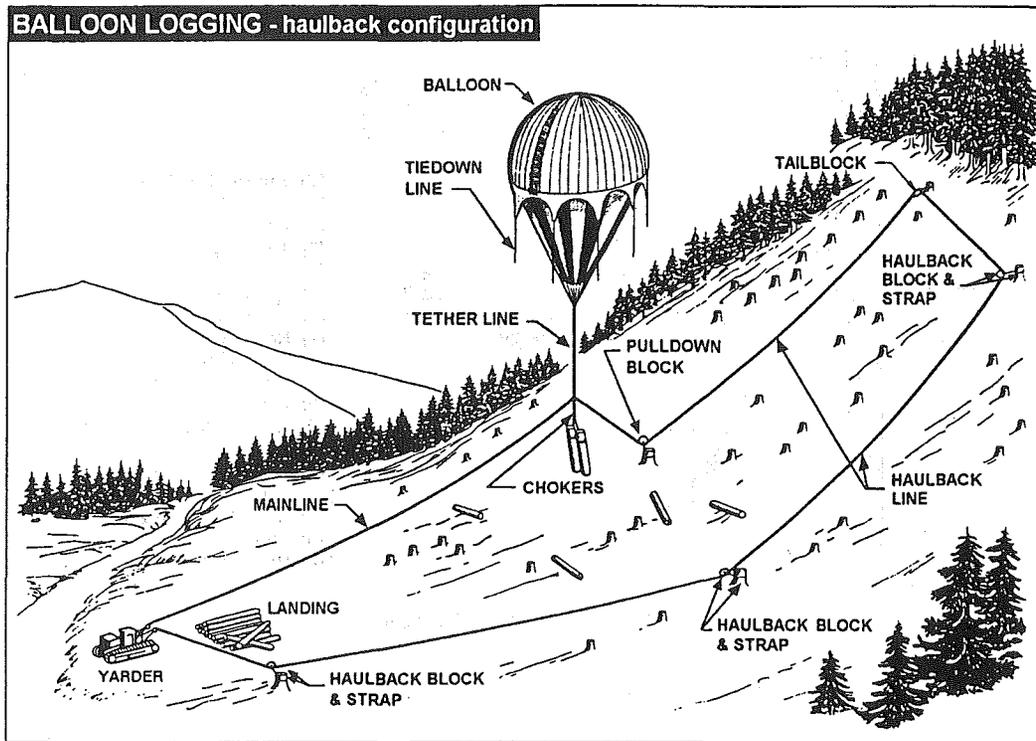


Figure 58: Balloon Logging – Haulback Configuration

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-99013, filed 8/18/99, effective 12/1/99.]

WAC 296-54-99014 Appendix 5—Wooden tree yarding and loading systems.

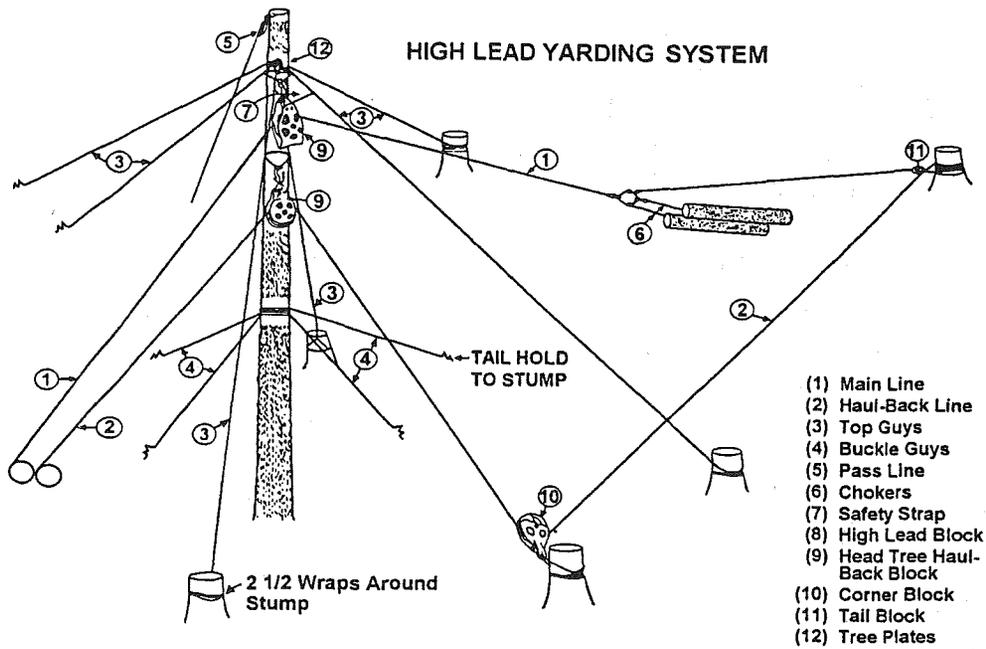
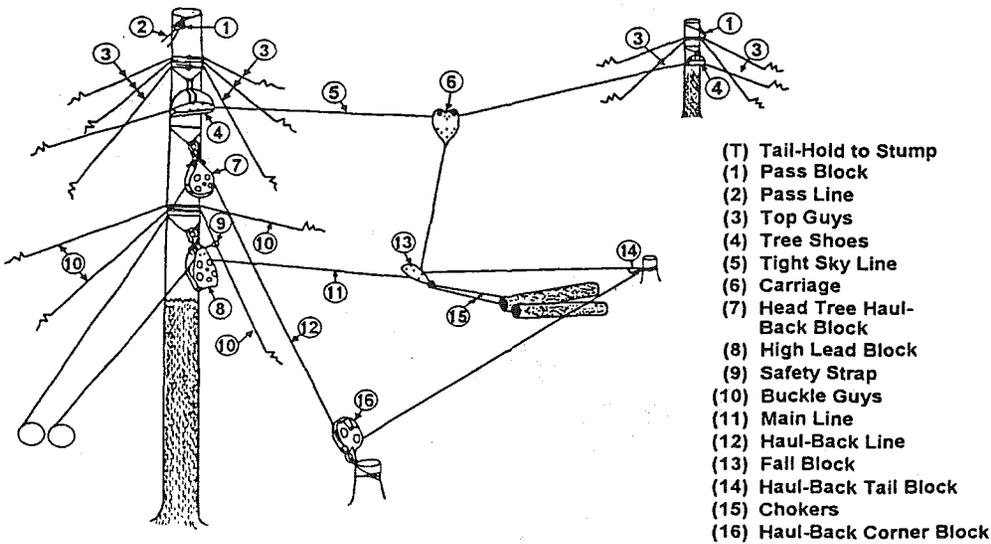
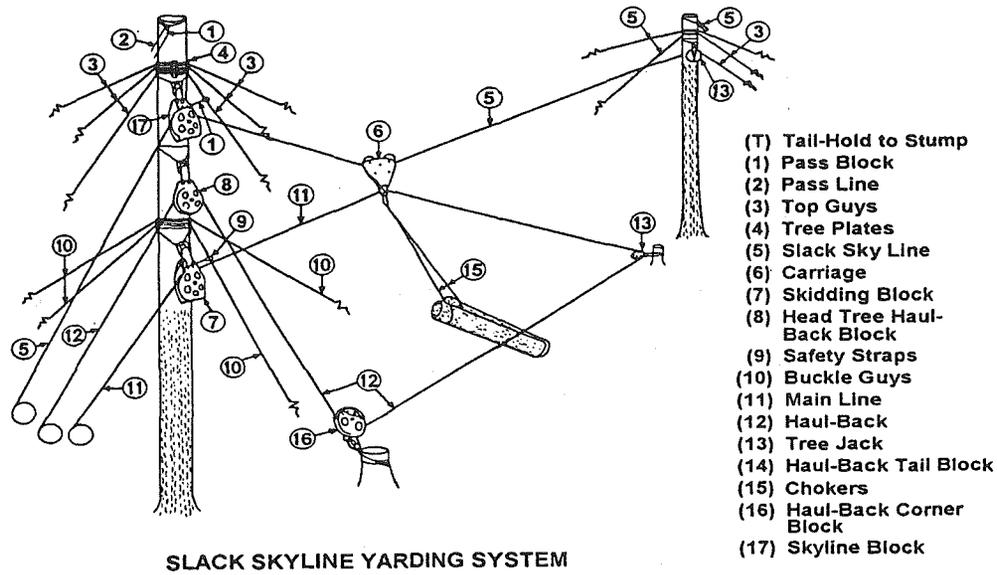


Figure 59: High Lead Yarding System



NORTH BEND YARDING SYSTEM

Figure 60: North Bend Yarding System



SLACK SKYLINE YARDING SYSTEM

Figure 61: Slack Skyline Yarding System

Heel Boom Loading

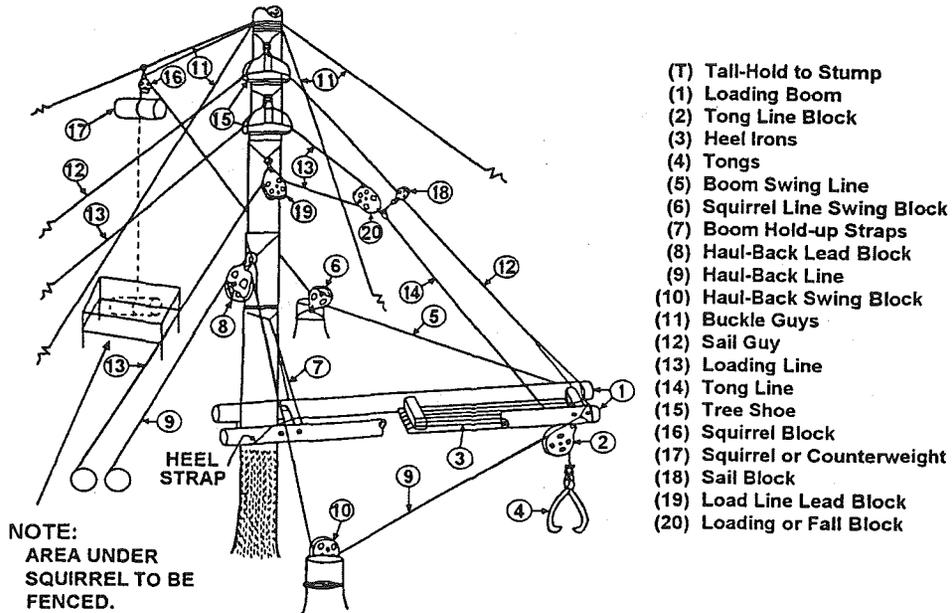


Figure 62: Heel Boom Loading

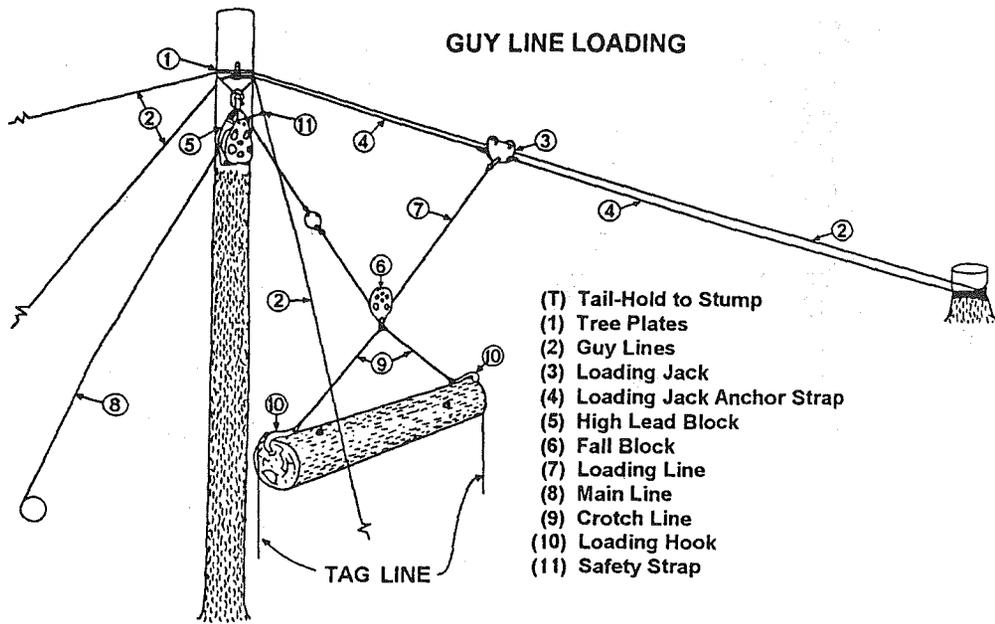


Figure 63: Guy Line Loading

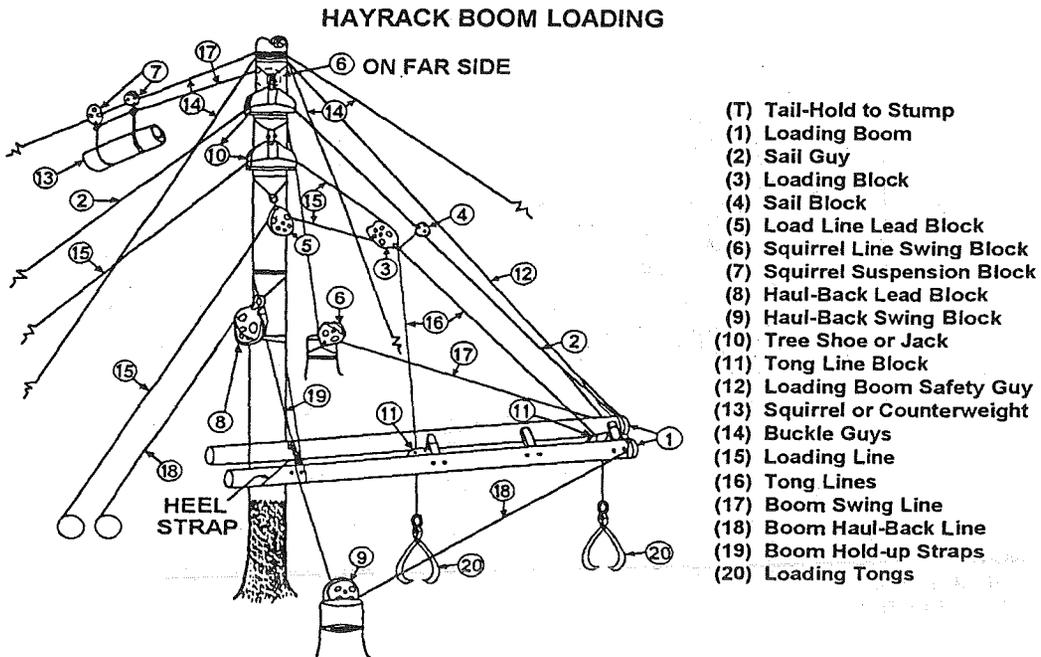


Figure 64: Hayrack Boom Loading

Chapter 296-56 WAC

SAFETY STANDARDS—LONGSHORE, STEVEDORE
AND RELATED WATERFRONT OPERATIONS

WAC

296-56-60053	Hazardous atmospheres and substances.
296-56-60077	Powered industrial trucks.
296-56-60235	Welding, cutting and heating (hot work).

WAC 296-56-60053 Hazardous atmospheres and substances. (1) Purpose and scope. This section covers areas where a hazardous atmosphere or substance may exist, except where one or more of the following sections apply: WAC 296-56-60049 Hazardous cargo; WAC 296-56-60051 Handling explosives or hazardous materials; WAC 296-56-60055 Carbon monoxide; WAC 296-56-60057 Fumigants, pesticides, insecticides and hazardous preservatives; WAC 296-56-60107 Terminal facilities handling menhaden and similar species of fish; WAC 296-56-60235 Welding, cutting and heating (hot work); and WAC 296-56-60237 Spray painting.

(2) Determination of hazard.

(a) Whenever a room, building, vehicle, railcar or other space contains or has contained a hazardous atmosphere, a designated and appropriately equipped person shall test the atmosphere before entry to determine whether a hazardous atmosphere exists.

(b) Records of results of any tests required by this section shall be maintained for at least thirty days.

(3) Testing during ventilation. When mechanical ventilation is used to maintain a safe atmosphere, tests shall be made by a designated person to ensure that the atmosphere is not hazardous.

(4) Entry into hazardous atmospheres. Only designated persons shall enter hazardous atmospheres. The following provisions shall apply:

(a) Persons entering a space containing a hazardous atmosphere shall be protected by respiratory and emergency protective equipment meeting the requirements of chapter 296-62 WAC, Part E;

(b) Persons entering a space containing a hazardous atmosphere shall be instructed in the nature of the hazard, precautions to be taken, and the use of protective and emergency equipment. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such space; and

(c) Except for emergency or rescue operations, employees shall not enter into any atmosphere which has been identified as flammable or oxygen deficient (less than nineteen and one-half percent oxygen). Persons who may be required to enter flammable or oxygen deficient atmospheres in emergency operations shall be instructed in the dangers attendant to those atmospheres and instructed in the use of self-contained breathing apparatus, which shall be utilized.

(d) To prevent inadvertent employee entry into spaces that have been identified as having hazardous, flammable or oxygen deficient atmospheres, appropriate warning signs or equivalent means shall be posted at all means of access to those spaces.

(5) When the packaging of asbestos cargo leaks, spillage shall be cleaned up by designated employees protected from

the harmful effects of asbestos as required by WAC 296-62-07517 and chapter 296-65 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-56-60053, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60053, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60053, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60053, filed 12/11/84.]

WAC 296-56-60077 Powered industrial trucks. (1) Applicability. This section applies to every type of powered industrial truck used for material or equipment handling within a marine terminal. Employers must comply with the provisions of WAC 296-24-230 and this section. It does not apply to over-the-road vehicles.

(2) General.

(a) Modifications, such as adding counterweights, that might affect the vehicle's capacity or safety shall not be performed without either the manufacturer's prior written approval or the written approval of a professional engineer experienced with the equipment who has consulted with the manufacturer, if available. Capacity, operation and maintenance instruction plates, tags or decals shall be changed to conform to the equipment as modified.

(b) Unauthorized personnel shall not ride on powered industrial trucks. A safe place to ride shall be provided when riding is authorized.

(c) When a powered industrial truck is left unattended, load-engaging means shall be fully lowered, controls neutralized and brakes set. Unless the truck is in view and within twenty-five feet (7.6 m) of the operator, power shall be shut off. Wheels shall be blocked or curbed if the truck is on an incline.

(d) Powered industrial trucks shall not be operated inside highway vehicles or railcars having damage which could affect operational safety.

(e) Powered industrial trucks shall be marked with their rated capacities, which shall be visible to the operator.

(f) Only stable and safely arranged loads within the rated capacity of the truck shall be handled.

(g) Drivers shall ascend and descend grades slowly.

(h) Drivers shall slow down and sound the horn at crossaisles and other locations where visibility is obstructed.

(i) If the load obstructs the forward view drivers shall travel with the load trailing.

(j) Steering knobs shall not be used unless the truck is equipped with power steering.

(k) When powered industrial trucks use cargo lifting devices that have a means of engagement hidden from the operator, a means shall be provided to enable the operator to determine that the cargo has been engaged.

(l) When cargo is being towed on pipe trucks or similar equipment, a safe means shall be provided to protect the driver from sliding loads.

(3) Maintenance.

(a) Only designated persons shall perform maintenance and repair.

(b) Batteries on all powered trucks shall be disconnected during repairs to the primary electrical system unless power is necessary for testing and repair. On trucks equipped with

systems capable of storing residual energy, that energy shall be safely discharged before work on the primary electrical system begins.

(c) Replacement parts whose function might affect operational safety shall be equivalent in strength and performance capability to the original parts which they replace.

(d) Braking systems or other mechanisms used for braking shall be operable and in safe condition.

(e) Powered industrial trucks shall be maintained in safe working order. Safety devices shall not be removed or made inoperative except as otherwise provided in this section. Trucks with a fuel system leak or any other safety defect shall not be operated.

(f) Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated as safe for such repairs.

(4) Approved trucks.

(a) "Approved power-operated industrial truck" means one listed or approved for the intended use by a nationally recognized testing laboratory.

(b) Approved trucks acquired and used after February 15, 1972, shall bear a label or other identification indicating testing laboratory approval.

(c) When the atmosphere in an area is hazardous and the provisions of United States Coast Guard regulations at 33 CFR 126.15(e) do not apply, only power-operated industrial trucks approved for such locations shall be used.

(5) Duties of operator.

(a) A power-driven vehicle operator's special duties are:

(i) To operate the vehicle in a safe manner.

(ii) To test brakes, steering gear, lights, horns, or other warning devices, clutches, etc., before starting work.

(iii) To have the vehicle at all times under control so that it can be brought to an emergency stop in the clear space in front of the vehicle.

(iv) To back down any incline of two percent or more when traveling with a load on the fork lift jitney.

(b) Unobstructed view. When traveling, power-propelled vehicles shall at all times be operated in a manner giving the operator a reasonably unobstructed view in the direction of travel. Where this is impractical, the operator shall be directed in travel, by a person designated to do so.

(c) Employee riding safety. Operators and authorized passengers shall not be permitted to ride with legs or arms extending outside any vehicle nor shall they be permitted to ride while standing unless the vehicle is designed to be operated from a standing position.

(d) Moving vehicles. Vehicles shall be controlled manually while being pushed or towed except when a tow bar is used. Special precautions shall be taken when pushing vehicles where view is obstructed. Vehicles shall not be pushed with blades of a forklift.

(e) Moving highway trailers. In all cargo operations involving the use of highway trailers, trailers shall be moved in such a manner that the moving trailer is completely under control at all times. Special caution shall be exercised when such trailers are moving on inclines. Trailers shall be loaded in a manner which will prevent the cargo from shifting, and the load in the trailer shall be evenly distributed so as not to cause the trailer to tip to one side.

(f) Prohibited forms of riding. Riding on tongue or handles of trailers or forks of power-propelled vehicles is prohibited.

(g) Regular seats for riders. No one except the operator shall ride on power-driven vehicles unless regular seats are provided to accommodate passengers.

(h) Jumping on or off moving vehicles. Employees shall not jump on or off moving vehicles.

(i) Reporting defects. If a power-driven vehicle is at any time found to be in any way unsafe, the operator shall report same immediately to the person in charge and such vehicle shall not be used for production work until it has been made safe.

(6) Vehicle equipment and maintenance.

(a) Horns and lights. All power-propelled vehicles shall be provided with horns or other warning devices.

(b) Power-propelled vehicles used for night work, when required to travel away from an illuminated work area shall be equipped with a light or lights directed in the direction of travel in order to safely travel about the area.

(c) Guards on operator's platform. Every power truck operated from an end platform or standing position shall be equipped with a substantial guard securely attached to the platform or frame of the vehicle in such a manner as to protect the operator from falling objects and so designed that the operator can easily mount or dismount from the operating station.

(d) Seat cushions. All vehicles having a driver's seat shall be provided with resilient seat cushions fixed in place.

(e) Securing of counterbalances. Counterbalances of all power-driven vehicles shall be positively secured to prevent accidental dislodging, but may be a removable type which may be removed, if desired, prior to hoisting the vehicle.

(f) Exhaust pipes and mufflers. Exhaust pipes and mufflers of internal combustion engines, where workers are exposed to contact shall be isolated or insulated. Exhaust pipes shall be constructed to discharge not less than seventy-two inches above the floor on jitneys and eighty-four inches on forklifts or less than twenty inches from the floor.

(g) Ventilation where internal combustion vehicles are used. Internal combustion engines may be used only in areas where adequate ventilation is provided.

(h) Concentration levels of carbon monoxide gas created by powered industrial truck operations shall not exceed the levels specified in WAC 296-56-60055.

(i) When disputes arise concerning degree of concentration, methods of sampling to ascertain the conditions should be referred to a qualified industrial hygienist.

(j) Cargo truck couplings. Couplings installed on cargo trucks (four-wheelers) shall be of a type which will prevent accidental disengaging.

(k) Operating levers. Operating levers on power-driven vehicles shall be so placed as not to project toward the operator's body.

(l) Front axle assembly. The front axle assembly on all trailers shall be securely fastened to the truck bed.

(m) Air line hook-up. Tractors hauling heavy duty highway trailers shall have an air line brake hook-up.

(n) Floor mats. On power-driven vehicles where the operator stands on a platform, resilient foot mats shall be securely attached.

(o) Cleaning vehicles. All power-propelled vehicles shall be cleaned at frequent intervals to remove any accumulation of dust and grease that may present a hazard.

(7) Forklift trucks.

(a) Overhead guards.

(i) When operators are exposed to overhead falling hazards, forklift trucks shall be equipped with securely attached overhead guards. Guards shall be constructed to protect the operator from falling boxes, cartons, packages, or similar objects.

(ii) Overhead guards shall not obstruct the operator's view, and openings in the top of the guard shall not exceed six inches (15.2 cm) in one of the two directions, width or length. Larger openings are permitted if no opening allows the smallest unit of cargo being handled to fall through the guard.

(iii) Overhead guards shall be built so that failure of the vehicle's mast tilting mechanism will not displace the guard.

(iv) An overhead guard, otherwise required by this paragraph, may be removed only when it would prevent a truck from entering a work space and if the operator is not exposed to low overhead obstructions in the work space.

(v) Overhead guards shall be large enough to extend over the operator during all truck operations, including forward tilt.

(b) Supplies to ship's rail. Cargo or supplies shall not be hoisted to or from ship's rail with a forklift. This does not apply to ramp or side port loading.

(c) Position of forks. When standing, lift forklift forks shall be lowered to floor. When moving, lift forklift forks shall be kept as low as possible.

(d) Forklift use in gangplank moving. Not less than two forklifts shall be used to place or remove gangplanks unless fork width prevents tipping and manufacturer's rated lifting capacity of the forklift is not exceeded.

(e) Forklift seat covers. Seats on forklifts shall be provided with a removable waterproof cover when they are exposed to the weather.

(f) Raised equipment to be blocked. Workers shall not work below the raised bed of a dump truck, raised buckets of front end loaders, raised blades of tractors or in similar positions without blocking the equipment in a manner that will prevent it from falling. When working under equipment suspended by use of jacks, safety stands or blocking shall be used in conjunction with the jack.

(g) Maximum speed. The maximum speed for forklifts on all docks shall not exceed eight miles per hour. The speed limit shall be prominently posted on such docks.

(h) Load backrest extensions. Where necessary to protect the operator, forklift trucks shall be fitted with a vertical load backrest extension to prevent the load from hitting the mast when the mast is positioned at maximum backward tilt. For this purpose, a "load backrest extension" means a device extending vertically from the fork carriage frame to prevent raised loads from falling backward.

(i) Forks. Forks, fork extensions and other attachments shall be secured so that they cannot be accidentally dis-

lodged, and shall be used only in accordance with the manufacturer's recommendations.

(j) Counterweights. Counterweights shall be so affixed that they cannot be accidentally dislodged.

(k) Capacities and weights.

(i) Forklift truck rated capacities, with and without removable counterweights, shall not be exceeded. Rated capacities shall be marked on the vehicle and shall be visible to the operator. The vehicle weight, with and without counterweight, shall be similarly marked.

(ii) If loads are lifted by two or more trucks working in unison, the total weight of the load shall not exceed the combined rated lifting capacity of all trucks involved.

(l) Lifting of employees. Employees may be elevated by forklift trucks only when a platform is secured to the lifting carriage or forks. The platform shall meet the following requirements:

(i) The platform shall have a railing complying with WAC 296-56-60123(3).

(ii) The platform shall have toeboards complying with WAC 296-56-60123(4), if tools or other objects could fall on employees below.

(iii) When the truck has controls which are elevated with the lifting carriage, means shall be provided for employees on the platform to shut off power to the vehicle.

(iv) Employees on the platform shall be protected from exposure to moving truck parts.

(v) The platform floor shall be skid resistant.

(vi) A truck operator shall be at the truck's controls when employees are elevated unless the truck's controls are elevated with the lifting carriage.

(vii) While employees are elevated, the truck may be moved only to make minor placement adjustments.

(8) Bulk cargo-moving vehicles.

(a) Where a seated operator may come into contact with projecting overhead members, crawler-type bulk-cargo-moving vehicles that are rider operated shall be equipped with operator guards.

(b) Guards and their attachment points shall be so designed as to be able to withstand, without excessive deflection, a load applied horizontally at the operator's shoulder level equal to the drawbar pull of the machine.

(c) After July 26, 1999, bulk cargo-moving vehicles shall be equipped with rollover protection of such design and construction as to prevent the possibility of the operator being crushed because of a rollover or upset.

(9) Straddle trucks.

(a) Accessibility. Straddle trucks shall have a permanent means of access to the operator's station, including any handholds necessary for safe ascent and descent.

(b) Guarding.

(i) Main sprockets and chains to the wheels shall be guarded as follows:

(A) The upper sprocket shall be fully enclosed;

(B) The upper half of the lower sprocket shall be enclosed; and

(C) The drive chain shall be enclosed to a height of eight feet (2.6 m) except for that portion at the lower half of the lower sprocket.

(ii) Gears shall be fully enclosed and revolving parts which may be contacted by the operator shall be guarded.

(iii) When straddle trucks are used in the vicinity of employees, personnel-deflecting guards shall be provided around leading edges of front and rear wheels.

(c) Visibility. Operator visibility shall be provided in all directions of movement.

(10) Trailer-spotting tractors.

(a) Trailer-spotting tractors (fifth wheels) shall be fitted with any hand grabs and footing necessary for safe access to the fifth wheel.

(b) Rear cab windows shall be of safety glass or equivalent material.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-56-60077, filed 12/21/99, effective 3/1/00. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60077, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60077, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60077, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60077, filed 12/11/84.]

WAC 296-56-60235 Welding, cutting and heating (hot work). (1) Definition. "Hot work" means riveting, welding, flame cutting or other fire or spark-producing operation.

(2) Hot work in confined spaces. Hot work shall not be performed in a confined space until all requirements of chapter 296-62 WAC, Part M, are met.

(3) Fire protection.

(a) To the extent possible, hot work shall be performed in designated locations that are free of fire hazards.

(b) When hot work must be performed in a location that is not free of fire hazards, all necessary precautions shall be taken to confine heat, sparks, and slag so that they cannot contact flammable or combustible material.

(c) Fire extinguishing equipment suitable for the location shall be immediately available and shall be maintained in readiness for use at all times.

(d) When the hot work operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire during hot work and for a sufficient time after completion of the work to ensure that no fire hazard remains. The employer shall instruct all employees involved in hot work operations as to potential fire hazards and the use of fire fighting equipment.

(e) Drums and containers which contain or have contained flammable or combustible liquids shall be kept closed. Empty containers shall be removed from the hot work area.

(f) When openings or cracks in flooring cannot be closed, precautions shall be taken to ensure that no employees or flammable or combustible materials are exposed to sparks dropping through the floor. Similar precautions shall be taken regarding cracks or holes in walls, open doorways and open or broken windows.

(g) Hot work shall not be performed:

(i) In flammable or potentially flammable atmospheres;

(ii) On or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a designated person has tested the atmosphere inside the equipment or tanks and determined that it is not hazardous; or

(iii) Near any area in which exposed readily ignitable materials such as bulk sulphur, baled paper or cotton are stored. Bulk sulphur is excluded from this prohibition if suitable precautions are followed, the person in charge is knowledgeable and the person performing the work has been instructed in preventing and extinguishing sulphur fires.

(h)(i) Drums, containers or hollow structures that have contained flammable or combustible substances shall either be filled with water or cleaned, and shall then be ventilated. A designated person shall test the atmosphere and determine that it is not hazardous before hot work is performed on or in such structures.

(ii) Before heat is applied to a drum, container or hollow structure, an opening to release built-up pressure during heat application shall be provided.

(4) Gas welding and cutting.

(a) Compressed gas cylinders:

(i) Shall have valve protection caps in place except when in use, hooked up or secured for movement. Oil shall not be used to lubricate caps;

(ii) Shall be hoisted only while secured, as on a cradle or pallet, and shall not be hoisted by magnet, choker sling or cylinder caps;

(iii) Shall be moved only by tilting or rolling on their bottom edges;

(iv) Shall be secured when moved by vehicle;

(v) Shall be secured while in use;

(vi) Shall have valves closed when cylinders are empty, being moved or stored;

(vii) Shall be secured upright except when hoisted or carried;

(viii) Shall not be freed when frozen by prying the valves or caps with bars or by hitting the valve with a tool;

(ix) Shall not be thawed by boiling water;

(x) Shall not be exposed to sparks, hot slag, or flame;

(xi) Shall not be permitted to become part of electrical circuits or have electrodes struck against them to strike arcs;

(xii) Shall not be used as rollers or supports;

(xiii) Shall not have contents used for purposes not authorized by the supplier;

(xiv) Shall not be used if damaged or defective;

(xv) Shall not have gases mixed within, except by gas suppliers;

(xvi) Shall be stored so that oxygen cylinders are separated from fuel gas cylinders and combustible materials by either a minimum distance of twenty feet (6 m) or a barrier having a fire-resistance rating of thirty minutes; and

(xvii) Shall not have objects that might either damage the safety device or obstruct the valve placed on top of the cylinder when in use.

(b) Use of fuel gas. Fuel gas shall be used only as follows:

(i) Before regulators are connected to cylinder valves, the valves shall be opened slightly (cracked) and closed immediately to clear away dust or dirt. Valves shall not be cracked if gas could reach possible sources of ignition;

(ii) Cylinder valves shall be opened slowly to prevent regulator damage and shall not be opened more than one and one-half turns. Any special wrench required for emergency closing shall be positioned on the valve stem during cylinder

use. For manifolded or coupled cylinders, at least one wrench shall be immediately available. Nothing shall be placed on top of a cylinder or associated parts when the cylinder is in use;

(iii) Pressure-reducing regulators shall be attached to cylinder valves when cylinders are supplying torches or devices equipped with shut-off valves;

(iv) Cylinder valves shall be closed and gas released from the regulator or manifold before regulators are removed;

(v) Leaking fuel gas cylinder valves shall be closed and the gland nut tightened. If the leak continues, the cylinder shall be tagged, removed from service, and moved to a location where the leak will not be hazardous. If a regulator attached to a valve stops a leak, the cylinder need not be removed from the workplace but shall be tagged and may not be used again before it is repaired; and

(vi) If a plug or safety device leaks, the cylinder shall be tagged, removed from service, and moved to a location where the leak will not be hazardous.

(c) Hose.

(i) Fuel gas and oxygen hoses shall be easily distinguishable from each other by color or sense of touch. Oxygen and fuel hoses shall not be interchangeable. Hoses having more than one gas passage shall not be used.

(ii) When oxygen and fuel gas hoses are taped together, not more than four of each twelve inches (10.2 cm of each 30.5 cm) shall be taped.

(iii) Hose shall be inspected before use. Hose subjected to flashback or showing evidence of severe wear or damage shall be tested to twice the normal working pressure but not less than two hundred p.s.i. (1378.96 kPa) before re-use. Defective hose shall not be used.

(iv) Hose couplings shall not unlock or disconnect without rotary motion.

(v) Hose connections shall be clamped or securely fastened to withstand twice the normal working pressure but not less than three hundred p.s.i. (2068.44 kPa) without leaking.

(vi) Gas hose storage boxes shall be ventilated.

(d) Torches.

(i) Torch tip openings shall only be cleaned with devices designed for that purpose.

(ii) Torches shall be inspected before each use for leaking shut-off valves, hose couplings and tip connections. Torches shall be inspected before each use for leaking shut-off valves, hose couplings and tip connections. Torches with such defects shall not be used.

(iii) Torches shall not be lighted from matches, cigarette lighters, other flames or hot work.

(e) Pressure regulators. Pressure regulators, including associated gauges, shall be maintained in safe working order.

(f) Operational precaution. Gas welding equipment shall be maintained free of oil and grease.

(5) Arc welding and cutting.

(a) Manual electrode holders.

(i) The employer shall ensure that only manual electrode holders intended for arc welding and cutting and capable of handling the maximum current required for such welding or cutting shall be used.

(ii) Current-carrying parts passing through those portions of the holder gripped by the user and through the outer surfaces of the jaws of the holder shall be insulated against the maximum voltage to ground.

(b) Welding cables and connectors.

(i) Arc welding and cutting cables shall be insulated, flexible and capable of handling the maximum current required by the operation, taking into account the duty cycles.

(ii) Only cable free from repair or splice for ten feet (3 m) from the electrode holder shall be used unless insulated connectors or splices with insulating quality equal to that of the cable are provided.

(iii) When a cable other than the lead mentioned in (b)(ii) of this subsection wears and exposes bare conductors, the portion exposed shall not be used until it is protected by insulation equivalent in performance capacity to the original.

(iv) Insulated connectors of equivalent capacity shall be used for connecting or splicing cable. Cable lugs, where used as connectors, shall provide electrical contact. Exposed metal parts shall be insulated.

(c) Ground returns and machine grounding.

(i) Ground return cables shall have current-carrying capacity equal to or exceeding the total maximum output capacities of the welding or cutting units served.

(ii) Structures or pipelines, other than those containing gases or flammable liquids or conduits containing electrical circuits, may be used in the ground return circuit if their current-carrying capacity equals or exceeds the total maximum output capacities of the welding or cutting units served.

(iii) Structures or pipelines forming a temporary ground return circuit shall have electrical contact at all joints. Arcs, sparks or heat at any point in the circuit shall cause rejection as a ground circuit.

(iv) Structures or pipelines acting continuously as ground return circuits shall have joints bonded and maintained to ensure that no electrolysis or fire hazard exists.

(v) Arc welding and cutting machine frames shall be grounded, either through a third wire in the cable containing the circuit conductor or through a separate wire at the source of the current. Grounding circuits shall have resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

(vi) Ground connections shall be mechanically and electrically adequate to carry the current.

(d) When electrode holders are left unattended, electrodes shall be removed and holders placed to prevent employee injury.

(e) Hot electrode holders shall not be dipped in water.

(f) The employer shall ensure that when arc welders or cutters leave or stop work or when machines are moved, the power supply switch is kept in the off position.

(g) Arc welding or cutting equipment having a functional defect shall not be used.

(h)(i) Arc welding and cutting operations shall be separated from other operations by shields, screens, or curtains to protect employees in the vicinity from the direct rays and sparks of the arc.

(ii) Employees in areas not protected from the arc by screening shall be protected by appropriate filter lenses in accordance with subsection (8) of this section. When welders

are exposed to their own arc or to each other's arc, they shall wear filter lenses complying with the requirements of subsection (8) of this section.

(i) The control apparatus of arc welding machines shall be enclosed, except for operating wheels, levers, and handles.

(j) Input power terminals, top change devices and live metal parts connected to input circuits shall be enclosed and accessible only by means of insulated tools.

(k) When arc welding is performed in wet or high-humidity conditions, employees shall use additional protection, such as rubber pads or boots, against electric shock.

(6) Ventilation and employee protection in welding, cutting and heating.

(a) Mechanical ventilation requirements. The employer shall ensure that general mechanical ventilation or local exhaust systems shall meet the following requirements:

(i) General mechanical ventilation shall maintain vapors, fumes and smoke below a hazardous level;

(ii) Local exhaust ventilation shall consist of movable hoods positioned close to the work and shall be of such capacity and arrangement as to keep breathing zone concentrations below hazardous levels;

(iii) Exhausts from working spaces shall be discharged into the open air, clear of intake air sources;

(iv) Replacement air shall be clean and respirable; and

(v) Oxygen shall not be used for ventilation, cooling or cleaning clothing or work areas.

(b) Hot work in confined spaces. Except as specified in (c)(ii) and (iii) of this subsection, when hot work is performed in a confined space the employer shall, in addition to the requirements of chapter 296-62 WAC, Part M, ensure that:

(i) General mechanical or local exhaust ventilations shall be provided; or

(ii) Employees in the space shall wear respirators in accordance with chapter 296-62 WAC, Part E.

(c) Welding, cutting or heating of toxic metals.

(i) In confined or enclosed spaces, hot work involving the following metals shall only be performed with general mechanical or local exhaust ventilation that ensures that employees are not exposed to hazardous levels of fumes:

(A) Lead base metals;

(B) Cadmium-bearing filler materials; and

(C) Chromium-bearing metals or metals coated with chromium-bearing materials.

(ii) In confined or enclosed spaces, hot work involving the following metals shall only be performed with local exhaust ventilation meeting the requirements of this subsection or by employees wearing supplied air respirators in accordance with chapter 296-62 WAC, Part E;

(A) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials;

(B) Metals containing lead other than as an impurity, or coated with lead-bearing materials;

(C) Cadmium-bearing or cadmium-coated base metals; and

(D) Metals coated with mercury-bearing materials.

(iii) Employees performing hot work in confined or enclosed spaces involving beryllium-containing base or filler metals shall be protected by local exhaust ventilation and

wear supplied air respirators or self-contained breathing apparatus, in accordance with the requirements of chapter 296-62 WAC, Part E.

(iv) The employer shall ensure that employees performing hot work in the open air that involves any of the metals listed in (c)(i) and (ii) of this subsection shall be protected by respirators in accordance with the requirements of chapter 296-62 WAC, Part E and those working on beryllium-containing base or filler metals shall be protected by supplied air respirators, in accordance with the requirements of chapter 296-62 WAC, Part E.

(v) Any employee exposed to the same atmosphere as the welder or burner shall be protected by the same type of respiratory and other protective equipment as that worn by the welder or burner.

(d) Inert-gas metal-arc welding. Employees shall not engage in and shall not be exposed to the inert-gas metal-arc welding process unless the following precautions are taken:

(i) Chlorinated solvents shall not be used within two hundred feet (61 m) of the exposed arc. Surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is performed on them.

(ii) Employees in areas not protected from the arc by screening shall be protected by appropriate filter lenses in accordance with the requirements of subsection (8) of this section. When welders are exposed to their own arc or to each other's arc, filter lenses complying with the requirements of subsection (8) of this section shall be worn to protect against flashes and radiant energy.

(iii) Employees exposed to radiation shall have their skin covered completely to prevent ultraviolet burns and damage. Helmets and hand shields shall not have leaks, openings or highly reflective surfaces.

(iv) Inert-gas metal-arc welding on stainless steel shall not be performed unless exposed employees are protected either by local exhaust ventilation or by wearing supplied air respirators in accordance with the requirements of chapter 296-62 WAC, Part E.

(7) Welding, cutting and heating on preservative coatings.

(a) Before hot work is commenced on surfaces covered by a preservative coating of unknown flammability, a test shall be made by a designated person to determine the coating's flammability. Preservative coatings shall be considered highly flammable when scrapings burn with extreme rapidity.

(b) Appropriate precaution shall be taken to prevent ignition of highly flammable hardened preservative coatings. Highly flammable coatings shall be stripped from the area to be heated. An uncoiled fire hose with fog nozzle, under pressure, shall be immediately available in the hot work area.

(c) Surfaces covered with preservative coatings shall be stripped for at least four inches (10.2 cm) from the area of heat application or employees shall be protected by supplied air respirators in accordance with the requirements of chapter 296-62 WAC.

(8) Protection against radiant energy.

(a) Employees shall be protected from radiant energy eye hazards by spectacles, cup goggles, helmets, hand shields or

face shields with filter lenses complying with the requirements of this subsection.

(b) Filter lenses shall have an appropriate shade number, as indicated in Table G-1, for the work performed. Variations of one or two shade numbers are permissible to suit individual preferences.

(c) If filter lenses are used in goggles worn under the helmet, the shade numbers of both lenses equals the value shown in Table G-1 for the operation.

Table G-1.—Filter Lenses for Protection Against Radiant Energy

Operation	Shade No.
Soldering	2
Torch Brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1-6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Light gas welding, up to 1/8 inch	4 or 5
Medium gas welding, 1/8-1/2 inch	5 or 6
Heavy gas welding, over 1/2 inch	6 or 8
Shielded Metal-Arc Welding 1/16 to.....5/32-inch electrodes	10
Inert gas Metal-Arc Welding (non-ferrous) 1/16 to 5/32-inch electrodes	11
Shielded Metal-Arc Welding: 3/16 to 1/4-inch electrodes	12
5/16 and 3/8-inch electrodes	14

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-56-60235, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60235, filed 1/18/95, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60235, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60235, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60235, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60235, filed 12/11/84.]

Chapter 296-59 WAC

SAFETY STANDARDS FOR SKI AREA FACILITIES AND OPERATIONS

WAC

- 296-59-035 First-aid.
- 296-59-040 Repealed.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

- 296-59-040 First-aid kits and supplies. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-040, filed 7/6/88.] Repealed by 00-01-038, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-59-035 First-aid. The first-aid provisions of chapter 296-24 WAC, Part A-1 of the general safety and health standards apply within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-59-035, filed 12/7/99, effective 2/1/00. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-035, filed 7/6/88.]

WAC 296-59-040 Repealed. See Disposition Table at beginning of this chapter.

Chapter 296-62 WAC

OCCUPATIONAL HEALTH STANDARDS—SAFETY STANDARDS FOR CARCINOGENS

WAC

- 296-62-071 Respiratory protection.
- 296-62-07101 To whom does chapter 296-62 WAC, Part E apply?
- 296-62-07102 When are you allowed to rely on respirators to protect employees from breathing contaminated air?
- 296-62-07103 What are your responsibilities as an employer?
- 296-62-07105 Definitions.
- 296-62-07107 When is a respiratory protection program required?
- 296-62-07109 When must you update your written respiratory protection program?
- 296-62-07111 What must be included in your written respiratory protection program?
- 296-62-07113 What are the requirements for a program administrator?
- 296-62-07115 Who pays for the respirators, training, medical evaluations, and fit testing?
- 296-62-07117 What must you do when employees choose to wear respirators when respirators are not required?
- 296-62-07119 Repealed.
- 296-62-07121 Repealed.
- 296-62-07130 What must be considered when selecting any respirator?
- 296-62-07131 What else must you consider when selecting a respirator for use in atmospheres that are not IDLH?
- 296-62-07132 What else must you consider when selecting a respirator for use in IDLH atmospheres?
- 296-62-07133 What else must you consider when selecting a respirator for emergency and rescue use?
- 296-62-07150 What are the general requirements for medical evaluations?
- 296-62-07151 Who must perform medical evaluations?
- 296-62-07152 What information must you provide to the PLHCP in addition to the questionnaire?
- 296-62-07153 How must the medical evaluations and the questionnaire be administered?
- 296-62-07154 Who must review the questionnaire and determine what, if any, follow-up evaluations are needed?
- 296-62-07155 What must be included in the PLHCP's written recommendation?
- 296-62-07156 When are additional medical evaluations required?
- 296-62-07160 When is fit testing required?
- 296-62-07161 What is required when an employee finds the respirator's fit unacceptable?
- 296-62-07162 How must fit testing be done?
- 296-62-07170 How must you prevent problems with the seal on tight-fitting facepieces?
- 296-62-07171 How do you monitor continuing effectiveness of your employees' respirators?
- 296-62-07172 What are the standby procedures when respirators are used in IDLH situations?
- 296-62-07175 How must respirators be cleaned and disinfected?
- 296-62-07176 How must respirators be stored?
- 296-62-07177 When must respirators be inspected?
- 296-62-07178 How must respirators be inspected and maintained?
- 296-62-07179 How must respirators be repaired and adjusted?
- 296-62-07182 What are the breathing gas requirements for atmosphere-supplying respirators?
- 296-62-07184 How must filters, cartridges and canisters be labeled?
- 296-62-07186 What are the general training requirements?
- 296-62-07188 How do you know if you adequately trained your employees?
- 296-62-07190 When must your employees be trained?
- 296-62-07192 How must you evaluate the effectiveness of your respiratory protection program?
- 296-62-07194 What are the recordkeeping requirements?
- 296-62-07201 Appendix A-1: General fit testing requirements for respiratory protection—Mandatory.
- 296-62-07202 What are the general requirements for fit testing?
- 296-62-07203 What are the fit test exercise requirements?
- 296-62-07205 Appendix A-2: Qualitative fit testing (QLFT) protocols for respiratory protection—Mandatory.
- 296-62-07206 What are the general qualitative fit testing (QLFT) protocols?
- 296-62-07208 Isoamyl acetate protocol (a QLFT).
- 296-62-07209 What are the odor threshold screening procedures for isoamyl acetate (QLFT)?

296-62-07210	What are the isoamyl acetate fit testing procedures (QLFT)?	296-62-07295	What are the limitations of self-contained breathing apparatus respirators (SCBA)?
296-62-07212	Saccharin solution aerosol protocol (QLFT).	296-62-07306	Requirements for areas containing carcinogens listed in WAC 296-62-07302.
296-62-07213	What are the taste threshold screening procedures for saccharin (QLFT)?	296-62-07308	General regulated area requirements.
296-62-07214	What is the saccharin solution aerosol fit testing procedure (QLFT)?	296-62-07329	Vinyl chloride.
296-62-07217	Bitrex™ (denatonium benzoate) solution aerosol qualitative fit testing (QLFT) protocol.	296-62-07336	Acrylonitrile.
296-62-07218	What is the taste threshold screening procedure for Bitrex™ (QLFT)?	296-62-07337	Appendix A—Substance safety data sheet for acrylonitrile.
296-62-07219	What is the Bitrex™ solution aerosol fit testing procedure (QLFT)?	296-62-07342	1,2-Dibromo-3-chloropropane.
296-62-07222	Irritant smoke (stannic chloride) protocol (QLFT).	296-62-07343	Appendix A—Substance safety data sheet for DBCP.
296-62-07223	What are the general requirements and precautions for irritant smoke fit testing (QLFT)?	296-62-07347	Inorganic arsenic.
296-62-07224	What is the sensitivity screening check protocol for irritant smoke (QLFT)?	296-62-07354	Appendices—Inorganic arsenic.
296-62-07225	What is the irritant smoke fit testing procedure (QLFT)?	296-62-07367	Respiratory protection and personal protective equipment.
296-62-07230	Appendix A-3: Quantitative fit testing (QNFT) protocols for respiratory protection—Mandatory.	296-62-07369	Emergency situations.
296-62-07231	What are the general requirements for quantitative fit testing (QNFT)?	296-62-07379	Repealed.
296-62-07233	Generated aerosol quantitative fit testing protocol (QNFT).	296-62-07383	Appendix A—Substance safety data sheet for ethylene oxide (nonmandatory).
296-62-07234	What equipment is required for generated aerosol fit testing (QNFT)?	296-62-07413	Respirator protection.
296-62-07235	What are the procedures for generated aerosol quantitative fit testing (QNFT)?	296-62-07425	Communication of cadmium hazards to employees.
296-62-07236	How are fit factors calculated (QNFT)?	296-62-07431	Repealed.
296-62-07238	Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.	296-62-07433	Appendices.
296-62-07239	General information about ambient aerosol condensation nuclei counter (CNC) protocol (QNFT).	296-62-07441	Appendix A, substance safety data sheet—Cadmium.
296-62-07240	What are the general requirements for ambient aerosol condensation nuclei counter (CNC) protocol (QNFT)?	296-62-07445	Repealed.
296-62-07242	What are the Portacount fit testing procedures?	296-62-07460	Butadiene.
296-62-07243	How is the Portacount test instrument used?	296-62-07470	Methylene chloride.
296-62-07245	Controlled negative pressure (CNP) quantitative fit testing protocol (QNFT).	296-62-07521	Lead.
296-62-07246	How does controlled negative pressure (CNP) fit testing work (QNFT)?	296-62-07523	Benzene.
296-62-07247	What are the controlled negative pressure (CNP) fit testing requirements and procedures (QNFT)?	296-62-07533	Repealed.
296-62-07248	What test exercises are required for controlled negative pressure (CNP) fit testing (QNFT)?	296-62-07540	Formaldehyde.
296-62-07251	Appendix B-1: User seal check procedures—Mandatory.	296-62-07542	Appendix A—Substance technical guideline for formalin.
296-62-07253	Appendix B-2: Respirator cleaning procedures—Mandatory.	296-62-07550	Repealed.
296-62-07255	Appendix C: WISHA respirator medical evaluation questionnaire—Mandatory.	296-62-07615	Respiratory protection.
296-62-07257	Appendix D: Health care provider respirator recommendation form—Nonmandatory.	296-62-07635	Repealed.
296-62-07260	Appendix E: Additional information regarding respirator selection—Nonmandatory.	296-62-07639	Repealed.
296-62-07261	How do you classify respiratory hazards?	296-62-07662	Repealed.
296-62-07263	What are oxygen deficient respiratory hazards?	296-62-07664	Repealed.
296-62-07265	What needs to be considered when combinations of contaminants occur in the workplace?	296-62-07666	Repealed.
296-62-07267	What are the two major types of respirators?	296-62-07668	Repealed.
296-62-07269	What are air-purifying respirators (APRs)?	296-62-07670	Repealed.
296-62-07271	What are the general limitations for air-purifying respirators (APRs)?	296-62-07672	Repealed.
296-62-07273	What are particulate-removing respirators?	296-62-07701	Scope and application.
296-62-07275	What are vapor- and gas-removing respirators?	296-62-07703	Definitions.
296-62-07277	What are combination particulate- and vapor- and gas-removing respirators?	296-62-07709	Exposure assessment and monitoring.
296-62-07279	What types of filters, canisters and cartridges are available for air-purifying respirators (APRs)?	296-62-07712	Requirements for asbestos activities in construction and shipyard work.
296-62-07281	How do atmosphere-supplying respirators work?	296-62-07713	Methods of compliance for asbestos activities in general industry.
296-62-07283	What are the capabilities and limitations of atmosphere-supplying respirators?	296-62-07715	Respiratory protection.
296-62-07285	What is a supplied-air respirator?	296-62-07721	Communication of hazards to employees.
296-62-07287	What are the general capabilities and limitations of supplied-air respirators?	296-62-07722	Employee information and training.
296-62-07289	What are combination supplied-air and air-purifying respirators?	296-62-07728	Competent person.
296-62-07291	What are combination supplied-air respirators with auxiliary self-contained air supply?	296-62-07733	Appendices.
296-62-07293	What is a self-contained breathing apparatus respirator (SCBA)?	296-62-07735	Appendix A—WISHA reference method—Mandatory.
		296-62-07737	Appendix B—Detailed procedure for asbestos sampling and analysis—Nonmandatory.
		296-62-07739	Repealed.
		296-62-11019	Spray-finishing operations.
		296-62-11021	Open surface tanks.
		296-62-130	Emergency washing facilities.
		296-62-141	Permit-required confined spaces.
		296-62-14100	Scope and application.
		296-62-14105	Definitions.
		296-62-14110	General requirements.
		296-62-14115	Permit-required confined space program (permit space program).
		296-62-14120	Permit system.
		296-62-14125	Required entry permit information.
		296-62-14130	Training.
		296-62-14135	Duties of authorized entrants.
		296-62-14140	Duties of attendants.
		296-62-14145	Duties of entry supervisors.
		296-62-14150	Rescue and emergency services.
		296-62-14155	Employee participation.
		296-62-14170	Appendices to WAC 296-62-141—Permit-required confined spaces.
		296-62-14171	Appendix A—Permit-required confined space decision flow chart.
		296-62-14172	Appendix B—Procedures for atmospheric testing.
		296-62-14173	Appendix C—Examples of permit-required confined space programs.
		296-62-14174	Appendix D—Sample permits.

296-62-14175	Appendix E—Sewer system entry.	296-62-30535	Recordkeeping of medical surveillance activities.
296-62-14176	Appendix F—Rescue team or rescue service evaluation criteria.	296-62-3060	Engineering controls, work practices, and personal protective equipment for employee protection.
296-62-145	Repealed.	296-62-30605	Personal protective equipment selection.
296-62-14500	Repealed.	296-62-30610	Totally encapsulating chemical protective suits.
296-62-14501	Repealed.	296-62-30615	Personal protective equipment (PPE) program.
296-62-14503	Repealed.	296-62-3070	Monitoring concentrations of hazardous substances.
296-62-14505	Repealed.	296-62-30705	Monitoring during initial entry.
296-62-14507	Repealed.	296-62-30710	Periodic monitoring.
296-62-14509	Repealed.	296-62-30715	Monitoring of high-risk employees.
296-62-14511	Repealed.	296-62-3080	Informational programs.
296-62-14513	Repealed.	296-62-3090	General requirements for handling drums and containers.
296-62-14515	Repealed.	296-62-30905	Opening drums and containers.
296-62-14517	Repealed.	296-62-30910	Material handling equipment.
296-62-14519	Repealed.	296-62-30915	Radioactive wastes.
296-62-14520	Repealed.	296-62-30920	Shock-sensitive wastes.
296-62-14521	Repealed.	296-62-30925	Laboratory waste packs.
296-62-14523	Repealed.	296-62-30930	Sampling of drum and container contents.
296-62-14525	Repealed.	296-62-30935	Shipping and transport of drums.
296-62-14527	Repealed.	296-62-30940	Tanks and vaults procedures.
296-62-14529	Repealed.	296-62-3100	Decontamination procedures.
296-62-14533	Cotton dust.	296-62-31005	Location of decontamination areas.
296-62-20011	Respiratory protection.	296-62-31010	Decontamination of equipment and solvents.
296-62-20017	Medical surveillance.	296-62-31015	Decontamination of personal protective clothing and equipment.
296-62-20019	Employee information and training.	296-62-31020	Showers and change rooms used for decontamination.
296-62-20027	Appendix A—Coke oven emissions substance information sheet.	296-62-3110	Emergency response plan for employees at uncontrolled hazardous waste sites.
296-62-20029	Appendix B—Industrial hygiene and medical surveillance guidelines.	296-62-31105	Elements of an emergency response plan at uncontrolled hazardous waste sites.
296-62-300	Hazardous waste operations and treatment, storage, and disposal facilities.	296-62-31110	Procedures for handling emergency incidents at uncontrolled hazardous waste sites.
296-62-30001	Scope and application.	296-62-3112	Repealed.
296-62-30003	Definitions.	296-62-3120	Illumination.
296-62-3010	Overview of a written safety and health program.	296-62-3120	Sanitation at temporary workplaces.
296-62-30105	Elements of a safety and health program.	296-62-3130	Potable water.
296-62-30110	Safety considerations during the initial site excavation.	296-62-31305	Nonpotable water.
296-62-30115	Notifying contractors and subcontractors of procedures and hazards.	296-62-31310	Toilet facilities.
296-62-30120	Availability of the safety and health program.	296-62-31315	Food handling.
296-62-30125	Organizational structure of the site safety and health program.	296-62-31320	Temporary sleeping quarters.
296-62-30130	Comprehensive workplan of the site program.	296-62-31325	Washing facilities.
296-62-30135	Overview of a site-specific safety and health plan.	296-62-31330	Showers and change rooms.
296-62-30140	Preentry briefing of the site-specific safety and health plan.	296-62-31335	New technology programs.
296-62-30145	Effectiveness of site safety and health plan.	296-62-3138	Certain operations conducted under the Resource Conservation and Recovery Act of 1976 (RCRA).
296-62-3020	Site characterization and analysis.	296-62-31405	Safety and health program under RCRA.
296-62-30205	Preliminary evaluation.	296-62-31410	Hazard communication program requirements under RCRA.
296-62-30210	Hazard identification.	296-62-31415	Medical surveillance program requirements under RCRA.
296-62-30215	Required information.	296-62-31420	Decontamination program requirements under RCRA.
296-62-30220	Personal protective equipment.	296-62-31425	New technology programs requirements under RCRA.
296-62-30225	Monitoring.	296-62-31430	Material handling program requirements under RCRA.
296-62-30230	Risk identification.	296-62-31435	Training program for new employees under RCRA.
296-62-30235	Employee notification.	296-62-31440	Training program for current employees.
296-62-3030	Site control.	296-62-31445	RCRA requirements for trainers.
296-62-30305	Site control program.	296-62-31450	Emergency response program requirements under RCRA.
296-62-30310	Elements of the site control program.	296-62-31455	Emergency response plan under RCRA.
296-62-30315	Site work zones.	296-62-31460	Elements of an emergency response plan under RCRA.
296-62-3040	General training requirements and the employees covered.	296-62-31465	Training requirements for emergency response under RCRA.
296-62-30405	Elements covered in training.	296-62-31470	Procedures for handling emergency incidents under RCRA.
296-62-30410	Initial training.	296-62-3152	Appendices to Part P—Hazardous waste operations and TSD facilities.
296-62-30415	Management and supervisor training.	296-62-3160	Appendix A—Personal protective equipment test methods.
296-62-30420	Law enforcement at illicit drug labs.	296-62-3180	Appendix C—Compliance guidelines.
296-62-30425	Training course content for 40 and 80 hour hazardous waste cleanup courses.	296-62-3190	Appendix D—References.
296-62-30430	Training content for 24-hour hazardous waste cleanup course.	296-62-3195	Appendix E—Training curriculum guidelines.
296-62-30435	16-hour supplemental training for hazardous waste sites.	296-62-410	Emergency response to hazardous substance release.
296-62-30440	Additional 8 hours of training for supervisors and managers.	296-62-41001	Scope and application.
296-62-30445	Qualifications for trainers.	296-62-41003	Definitions.
296-62-30450	Training certification.	296-62-41010	Emergency response.
296-62-30455	Training requirements for emergency response.	296-62-41011	Emergency response plan.
296-62-30460	Refresher training.	296-62-41013	Elements of an emergency response plan.
296-62-30465	Equivalent training.	296-62-41015	Procedures for handling emergency response.
296-62-3050	Medical surveillance.	296-62-41017	Skilled support personnel.
296-62-30505	Employees covered.	296-62-41019	Specialist employees.
296-62-30510	Frequency of medical examinations and consultations.	296-62-41020	Training.
296-62-30515	Content of medical examinations and consultations.	296-62-41021	Training before participation.
296-62-30520	Examination by a physician and costs.	296-62-41023	Trainers.
296-62-30525	Information provided to the physician.		
296-62-30530	Physician's written opinion.		

296-62-41025	Refresher training.		2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-41030	Employee personal protective equipment.		
296-62-41031	Personal protective equipment selection.		
296-62-41033	Totally encapsulating chemical protective suits.	296-62-07662	Appendix E to WAC 296-62-076—Qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07662, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-41035	Personal protective equipment (PPE) program.		
296-62-41040	Medical surveillance and consultation for emergency response.		
296-62-41041	Employees covered.		
296-62-41042	Frequency of medical examinations and consultations.		
296-62-41043	Content of medical examinations and consultations.		
296-62-41044	Examination by a physician and costs.	296-62-07664	Appendix E-1—Qualitative fit test protocols. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07664, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-41045	Information provided to the physician.		
296-62-41046	Physician's written opinion.		
296-62-41047	Recordkeeping of medical surveillance activities.		
296-62-41060	Post emergency response operations.		
296-62-41061	Removal of hazardous substances.		
296-62-41063	Employees training and protective equipment.	296-62-07666	Appendix E-1-a—Isoamyl acetate (banana oil) protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07666, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-41080	Appendices to Part R—Emergency response.		
296-62-41081	Appendix A—Personal protective equipment test methods.		
296-62-41082	Appendix B—General description and discussion of the levels of protection and protective gear.	296-62-07668	Appendix E-1-b—Saccharin solution aerosol protocol. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07668, filed 4/10/96, effective 6/1/96; 93-04-111 (Order 92-15), § 296-62-07668, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-41084	Appendix C—Compliance guidelines.		
296-62-41085	Appendix D—References.		
296-62-41086	Appendix E—Training curriculum guidelines.		
DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER			
296-62-07119	Identification of air-purifying respirator canisters. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07119, filed 7/27/81.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07670	Appendix E-1-c—Irritant fume protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07670, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07121	Effective date. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07121, filed 7/27/81.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07672	Appendix E-2—Quantitative fit test procedures. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07672, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07379	Dates. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07379, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07379, filed 11/30/87.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07739	Appendix C—Qualitative and quantitative fit testing procedures—Mandatory. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07739, filed 4/10/96, effective 6/1/96; 87-24-051 (Order 87-24), § 296-62-07739, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07739, filed 4/27/87.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07431	Dates. [Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07431, filed 3/13/93, effective 4/27/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-145	Permit-required confined spaces. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-145, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-145 reference section, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07445	Appendix C—Qualitative and quantitative fit testing procedures—(Fit test protocols). [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07445, filed 4/10/96, effective 6/1/96; 93-21-075 (Order 93-06), § 296-62-07445, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07445, filed 3/13/93, effective 4/27/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14500	Scope and application. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14500, filed 1/18/95, effective 3/1/95.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07533	Appendix E qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07533, filed 4/10/96, effective 6/1/96; 94-15-096 (Order 94-07), § 296-62-07533, filed 7/20/94, effective 9/20/94; 88-21-002 (Order 88-23), § 296-62-07533, filed 10/6/88, effective 11/7/88.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14501	Definitions. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 95-17-036, § 296-62-14501, filed 8/9/95, effective 9/25/95. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14501, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14501, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-62-14501, filed 8/8/80; Order 73-3, § 296-62-14501, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07550	Appendix E—Qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07550, filed 4/10/96, effective 6/1/96; 88-21-002 (Order 88-23), § 296-62-07550, filed 10/6/88, effective 11/7/88.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14503	General requirements. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14503, filed 1/18/95, effective 3/1/95; 91-11-070 (Order 91-01), § 296-62-14503, filed 5/20/91, effective 6/20/91; Order 73-3, § 296-62-14503, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07635	Effective date. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07635, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14505	Permit-required confined space program (permit space program). [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14505, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14505, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00.
296-62-07639	Startup dates. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07639, filed		

- Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14507 Permit system. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14507, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-14507, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-14507, filed 8/8/80; Order 73-3, § 296-62-14507, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14509 Entry permit. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14509, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14509, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14511 Training. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14511, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14511, filed 11/22/91, effective 12/24/91; Order 73-3, § 296-62-14511, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14513 Duties of authorized entrants. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14513, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14513, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14515 Duties of attendants. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14515, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14515, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-62-14515, filed 7/13/83, effective 9/12/83; 82-13-045 (Order 82-22), § 296-62-14515, filed 6/11/82; Order 73-3, § 296-62-14515, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14517 Duties of entry supervisors. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14517, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14517, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14519 Rescue and emergency services. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14519, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14519, filed 11/22/91, effective 12/24/91; Order 73-3, § 296-62-14519, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14520 Appendices to WAC 296-62-145—Permit-required confined spaces. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14520, filed 1/18/95, effective 3/1/95.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14521 Appendix A—Permit-required confined space decision flow chart. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14521, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14521, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14523 Appendix B—Procedures for atmospheric testing. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14523, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14523, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14525 Appendix C—Examples of permit-required confined space programs. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14525, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14525, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-14525, filed 1/15/82; Order 73-3, § 296-62-14525, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14527 Appendix D—Sample permits. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14527, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14527, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-14529 Appendix E—Sewer system entry. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 95-17-036, § 296-62-14529, filed 8/9/95, effective 9/25/95. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14529, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14529, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-62-3112 Emergency response to hazardous substance releases. [Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3112, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3112, filed 10/10/89, effective 11/24/89.] Repealed by 99-07-097, filed 3/23/99, effective 6/23/99. Statutory Authority: RCW 49.17.040.

WAC 296-62-071 Respiratory protection.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-071, filed 7/27/81.]

WAC 296-62-07101 To whom does chapter 296-62 WAC, Part E apply? Chapter 296-62 WAC, Part E applies to all employers covered by WISHA. Other requirements for personal protective equipment (PPE) are found in chapter 296-24 WAC, Part A-2.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07101, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-62-07101, filed 3/30/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07101, filed 7/27/81.]

WAC 296-62-07102 When are you allowed to rely on respirators to protect employees from breathing contaminated air? In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, vapors, or aerosols the goal must be to prevent atmospheric contamination. You must use, if feasible, accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, you must use respirators as required by chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07102, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07103 What are your responsibilities as an employer? (1) You must provide respirators, when necessary, to protect the health of your employees against recognized respiratory hazards including any exposures in excess of the permissible exposure limit.

(2) You must provide NIOSH-certified respirators that are applicable and suitable for the purpose intended.

(3) You must make sure your employees use respirators when required or when otherwise necessary.

(4) You must establish and maintain a written respiratory protection program that includes the requirements outlined in WAC 296-62-07111.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07103, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07103, filed 7/27/81.]

WAC 296-62-07105 Definitions. The following definitions are important terms used in this part.

Aerosol means a suspension of liquid or solid particles in air.

Air-purifying respirator means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor (APF) is the expected level of workplace respiratory protection provided by a properly functioning respirator worn by properly fitted and trained individuals. It describes the ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator.

Atmosphere-supplying respirator means a respirator that supplies the respirator user with breathing air from an uncontaminated source, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge (air-purifying) means a container with a filter, sorbent, or catalyst, or any combination of these materials, which removes specific contaminants from the air drawn through it.

Canister (oxygen-generating) means a container filled with a chemical that generates oxygen by chemical reaction.

Demand respirator means an atmosphere-supplying respirator that admits breathing air to the facepiece only when suction is created inside the facepiece by inhalation.

Dust means a solid, mechanically-produced particle with sizes varying from submicroscopic to visible. See WAC 296-62-07001(1).

Emergency situation means any occurrence that may or does result in an uncontrolled significant release of an airborne contaminant. Causes of emergency situations include, but are not limited to, equipment failure, rupture of containers, or failure of control equipment.

Employee exposure means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-service-life indicator (ESLI) means a system that warns the respirator user of the approach of the end of adequate respiratory protection: For example, that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator means a respirator intended to be used only for emergency exit.

Filter or air-purifying element means a component used in respirators to remove solid or liquid aerosols from the air when it is breathed.

Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically

estimates the ratio between the measured concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test means the use of an accepted protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual (see also Qualitative fit test QLFT and Quantitative fit test QNFT).

Fog means a mist of sufficient concentration to perceptibly obscure vision.

Full facepiece means a respirator that covers the wearer's nose, mouth, and eyes.

Fume means a solid condensation particle of extremely small particle size, generally less than one micrometer in diameter. See WAC 296-62-07001(2).

Half facepiece means a respirator that covers the wearer's nose and mouth.

Helmet means the rigid portion of a respirator that also provides protection against impact or penetration.

High-efficiency particulate air filter (HEPA) means a filter that removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

Hood means the portion of a respirator that completely covers the head and neck; may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.

Mist means a liquid condensation particle with sizes ranging from submicroscopic to visible. See WAC 296-62-07001(4).

Negative pressure respirator means a tight-fitting respirator in which the air pressure inside the facepiece is lower than the ambient air pressure outside the respirator during inhalation.

Nonroutine respirator use means wearing a respirator when carrying out a special task that occurs infrequently.

Odor threshold limit means the lowest concentration of a contaminant in air that can be detected by smell.

Oxygen deficient atmosphere means an atmosphere with an oxygen content below 19.5% by volume.

Particulate means a solid or liquid aerosol such as: Dust, fog, fume, mist, smoke, or spray.

Permissible exposure limit (PEL) means the legally established time-weighted average (TWA) concentration or ceiling concentration of a contaminant that must not be exceeded.

Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (for example, license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required in WAC 296-62-07150 through 296-62-07156.

Positive-pressure respirator means a respirator in which the air pressure inside the respiratory-inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation or leakage.

Qualitative fit test (QLFT) means a pass/fail fit test that relies on the individual's response to the test agent to assess the adequacy of respirator fit for an individual.

Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit for an individual by numerically measuring the amount of leakage into the respirator.

Respirable means air that is suitable for breathing.

Respirator means a device designed to protect the wearer from breathing harmful atmospheres.

Respiratory-inlet covering means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer. For example, the period of time that an air-purifying device is effective for removing a harmful substance from air when it is breathed.

Smoke means a system that includes the products of combustion, pyrolysis, or chemical reaction of substances in the form of visible and invisible solid and liquid particles and gaseous products in air. Smoke is usually of sufficient concentration to perceptibly obscure vision.

Sorbent is the material contained in a cartridge or canister that removes gases and vapors from the inhaled air.

Spray means a liquid, mechanically-produced particle with sizes generally in the visible.

Supplied-air respirator (SAR) or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is drawn from a separate, stationary system or an uncontaminated environment.

Tight-fitting facepiece means a respiratory inlet covering that forms a complete seal with the face.

Time-weighted average (TWA) means the average concentration of a contaminant in air during a specific time period.

User seal check means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

Valve (air or oxygen) means a device that controls the pressure, direction, or rate of flow of air or oxygen.

Window indicator means a device on a cartridge or canister that visually denotes the service life of the cartridge or canister.

You means the employer or the employer's designee except in WAC 296-62-07117(2) "Important Information About Voluntary Use of Respirators" when you refers to the employee.

Your refers to the employer or the employer's designee except in WAC 296-62-07117(2) "Important Information About Voluntary Use of Respirators" when your refers to the employee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07105, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-07105, filed 1/18/95, effective 3/1/95; 94-15-096 (Order 94-07), § 296-62-07105, filed 7/20/94, effective 9/20/94; 93-19-142 (Order 93-04), § 296-62-07105, filed 9/22/93, effective 11/1/93; 91-24-017 (Order 91-07), § 296-62-07105, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07105, filed 7/27/81.]

WAC 296-62-07107 When is a respiratory protection program required? (1) In any workplace where respirators are necessary to protect the health of the employee or whenever you require respirator use, you must develop and implement a written respiratory protection program with worksite-specific procedures and specifications for required respirator use.

(2) Upon request, you must provide the director's representative a copy of your written respiratory protection program.

Note: OSHA's *Small Entity Compliance Guide* contains criteria for the selection of a program administrator and a sample program that meets the requirements of this paragraph. Copies of the *Small Entity Compliance Guide* will be available from the Occupational Safety and Health Administration's Office of Publications, Room N 3101, 200 Constitution Avenue, NW, Washington, DC, 20210.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07107, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-62-07107, filed 4/10/90, effective 5/25/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-07107, filed 1/15/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07107, filed 7/27/81.]

WAC 296-62-07109 When must you update your written respiratory protection program? The program must be updated as necessary to reflect those changes in workplace conditions that may affect respirator use.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07109, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-62-07109, filed 6/11/82; 82-03-023 (Order 82-1), § 296-62-07109, filed 1/15/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07109, filed 7/27/81.]

WAC 296-62-07111 What must be included in your written respiratory protection program? Include the following provision in your written program, as applicable:

- Procedures for selecting respirators for use in the workplace and a list identifying the proper type of respirator for each respiratory hazard (see WAC 296-62-07130 through 296-62-07133);

- Medical evaluations of employees required to use respirators (see WAC 296-62-07150 through 296-62-07156);

- Fit testing procedures for tight-fitting respirators (see WAC 296-62-07160 through 296-62-07162, and WAC 296-62-07201 through 296-62-07248, Appendices A-1, A-2, and A-3);

- Procedures for proper use of respirators in routine tasks, nonroutine tasks, reasonably foreseeable emergency and rescue situations (see WAC 296-62-07170 through 296-62-07172);

- Procedures for issuing the proper type of respirator based on the respiratory hazards for each employee;

- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators (see WAC 296-62-07175 through 296-62-07179 and WAC 296-62-07253);

- Procedures to make sure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators (see WAC 296-62-07182);

- Training of employees in the respiratory hazards to which they are potentially exposed during routine, nonroutine, and unforeseeable emergency and rescue situations (see WAC 296-62-07188);

- Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance (see WAC 296-62-07188); and

- Procedures for regularly evaluating the effectiveness of the program (see WAC 296-62-07192).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07111, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07111, filed 7/27/81.]

WAC 296-62-07113 What are the requirements for a program administrator? You must designate a program administrator qualified by training or experience appropriate to the needs of your program to:

- Oversee the respiratory protection program; and
- Conduct the required evaluations of program effectiveness.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07113, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07113, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-07113, filed 11/22/91, effective 12/24/91; 88-14-108 (Order 88-11), § 296-62-07113, filed 7/6/88. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07113, filed 7/27/81.]

WAC 296-62-07115 Who pays for the respirators, training, medical evaluations, and fit testing? When respirators are required, you must provide respirators, training, medical evaluations, and fit testing at no cost to your employees (including expenses such as wages and travel). For voluntary use, see WAC 296-62-07117(3).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07115, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-07115, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-07115, filed 11/30/83; 82-08-026 (Order 82-10), § 296-62-07115, filed 3/30/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07115, filed 7/27/81.]

WAC 296-62-07117 What must you do when employees choose to wear respirators when respirators are not required? (1) You may provide respirators at the request of employees or permit employees to use their own respirators, if you determine that such respirator use will not in itself create a hazard.

(2) If you determine that any voluntary respirator use is permissible, you must provide the respirator users with the following information:

Figure 1 Important Information About Voluntary Use of Respirators

Note: "You" and "your" mean the employee in the following information.

Respirators protect against airborne contaminants when properly selected and worn. Respirator use is encouraged, even when exposure to contaminants are below the exposure limit(s), to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to you. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous contaminants (chemical & biological) does not exceed the limits set by WISHA standards. If your employer provides respirators for your voluntary use, or if you are allowed to provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and follow all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against solvent vapor or smoke (since smoke particles are much smaller than dust particles).
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

(3) In addition, you must establish, implement, and pay for those elements of a written respiratory protection program necessary to make sure that:

- Any employee using a respirator voluntarily is medically able to use that respirator, and that
- The respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user.

EXCEPTION: You are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of filtering facepieces (for example, dust masks).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07117, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07117, filed 7/27/81.]

WAC 296-62-07119 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07121 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07130 What must be considered when selecting any respirator? (1) You must identify and evaluate the respiratory hazard(s) in the workplace. This evaluation must reasonably estimate employee exposures to respiratory hazard(s) and identify the contaminant's chemical state

and physical form. Where you cannot identify or reasonably estimate the employee exposure, you must consider the atmosphere to be IDLH.

(2) You must identify relevant factors pertaining to the workplace and respirator user that affect respirator performance and reliability.

(3) You must select and provide the appropriate respirators based on the respiratory hazards and the relevant factors related to the workplace and user.

(4) You must select a NIOSH-certified respirator. The respirator must be used in compliance with the conditions of its certification.

(5) You must select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07130, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07131 What else must you consider when selecting a respirator for use in atmospheres that are not IDLH? (1) You must provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other WISHA statutory and regulatory requirements for routine, nonroutine, and reasonably foreseeable emergency and rescue situations.

(2) You must use the assigned protection factors (APFs) in Table 1 when selecting respirators.

Table 1—Assigned Protection Factors

Type of Respirator	Assigned Protection Factor ^a
Air-Purifying Respirators (APRs)	
Half-facepiece ^b for:	10
• Particulate-filter	
• Vapor- or gas-removing	
• Combination particulate-filter and vapor- or gas-removing	
Full facepiece for:	100
• Particulate-filter;	
• Vapor- or gas-removing;	
• Combination particulate-filter and vapor- or gas-removing	
Powered Air-Purifying Respirators (PAPRs)	
Powered air-purifying, loose fitting facepiece	25
Powered air-purifying, half facepiece	50
Powered air-purifying, full facepiece, equipped with HEPA filters	1000
Powered air-purifying, hood or helmet equipped with HEPA filters	1000
Supplied-Air (Airline) Respirators	
Supplied-air, demand, half facepiece	10
Supplied-air, continuous-flow, loose fitting facepiece	25
Supplied-air, continuous-flow or pressure-demand type, half facepiece	50
Supplied-air, demand, full facepiece	100
Supplied-air, continuous-flow or pressure-demand type, full facepiece	1000

Type of Respirator	Assigned Protection Factor ^a
Air-Purifying Respirators (APRs)	
Supplied-air, continuous-flow, helmet or hood	1000
Self-Contained Breathing Apparatus (SCBAs)	
Self-contained breathing apparatus, demand-type, half facepiece ^b	10
Self-contained breathing apparatus, demand-type, full facepiece	100
Self-contained breathing apparatus, pressure-demand type, full facepiece	10,000

Combination respirators. For combination respirators (such as, airline respirators with an air-purifying filter), the type and mode of operation having the lowest respirator protection factor must be applied to the combination respirator not listed.

^a An assigned protection factor is a numeric rating given to respirators, which tells how much protection the respirator can provide.

^b If the air contaminant causes eye irritation, the wearer of a respirator equipped with a quarter-mask or half-mask facepiece or mouthpiece and nose clamp must be permitted to use a protective goggle or to use a respirator equipped with a full facepiece. Mouthpiece and nose clamp respirators are approved by NIOSH only for escape from IDLH atmospheres.

(3) The respirator selected must be appropriate for the chemical state and physical form of the contaminant.

(4) For protection against gases and vapors, you must provide an atmosphere-supplying respirator or an air-purifying respirator, provided that:

- The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or
- If there is no ESLI appropriate for the conditions in your workplace, you must implement a change schedule for canisters and cartridges that is based on objective information or data that will make sure that canisters and cartridges are changed before the end of their service life. Your respirator program must describe:

- ◆ The information and data relied upon; and
- ◆ The basis for the canister and cartridge change schedule; and
- ◆ The basis for reliance on the data.

(5) For protection against particulates, you must provide:

- An atmosphere-supplying respirator; or
- An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR Part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR Part 84; or
- An air-purifying respirator equipped with any filter certified for particulates by NIOSH for contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers; or
- For filters to be changed as required in WAC 296-62-07171(4).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07131, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07132 What else must you consider when selecting a respirator for use in IDLH atmospheres?

(1) You must provide the following respirators for your employees to use in IDLH atmospheres:

- A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes; or
- A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

(2) Respirators provided only for escape from IDLH atmospheres must be NIOSH-certified for escape from the atmosphere in which they will be used.

(3) All oxygen-deficient atmospheres must be considered IDLH unless you demonstrate that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table 2 of this section (i.e., for the altitudes set out in the table). In such cases, any atmosphere-supplying respirator may be used.

Table 2 Altitudes for Oxygen Deficient Atmospheres

Altitude (ft.)	Oxygen deficient atmospheres (%O ₂) for which the employer may rely on any atmosphere-supplying respirator
Less than 3,001	16.0 - 19.5
3,001 - 4,000	16.4 - 19.5
4,001 - 5,000	17.1 - 19.5
5,001 - 6,000	17.8 - 19.5
6,001 - 8,000	19.3 - 19.5

¹ Above 8,000 feet the exception does not apply. Oxygen-enriched breathing air must be supplied above 14,000 feet.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07132, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07133 What else must you consider when selecting a respirator for emergency and rescue use?

(1) You must analyze emergency and rescue uses of respirators that may occur in each operation by carefully considering materials, equipment, processes, and personnel involved in each operation. The person who is thoroughly familiar with the particular operation must review the analysis. As part of your analysis, you must:

- Consider past occurrences requiring emergency or rescue use of respirators as well as conditions that resulted in such respirator applications;
- Consider the possible consequences of equipment or power failures, uncontrolled chemical reactions, fire, explosion, or human error; and
- Based on the above considerations, list potential hazards that may result in emergency or rescue use of respirators.

(2) Based upon the analysis, you must:

- Select the appropriate types of respirators;
- Provide an adequate number of respirators for each area where they may be needed for emergency or rescue use; and
- Maintain and store the respirators so that they are readily accessible and operational when needed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07133, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07150 What are the general requirements for medical evaluations? Before an employee is fit tested or required to use a respirator in the workplace, you must provide a medical evaluation to determine the employee's ability to use a respirator. You may rely upon a previous employer's medical evaluation, if you can show that:

- You have been provided with a copy of the written recommendation as required in WAC 296-62-07155 from the PLHCP approving the employee to use the respirator chosen; and
- The previous working conditions, which required respirator use as detailed in WAC 296-62-07154(1), are substantially similar to yours.

Exception: If an employee uses no other respirator than an escape-only respirator, medical evaluations are not required. This exception does not apply to respirators with tight-fitting facepieces (such as, gas masks).

Steps necessary for completing a medical evaluation:

- You identify a PLHCP (WAC 296-62-07151);
- You provide information to the PLHCP (WAC 296-62-07152);
- PLHCP reviews information and determines what additional questions, if any, to add to Part A of the questionnaire (WAC 296-62-07153(1));
- You administer the questionnaire confidentially (WAC 296-62-07153(2));
- PLHCP reviews and evaluates the questionnaire (WAC 296-62-07154);
- PLHCP completes any follow-up medical evaluations with employees (WAC 296-62-07154);
- PLHCP completes the written recommendation and sends it to the employee and you (WAC 296-62-07155 (1) and (2));
- You respond appropriately to written recommendations (WAC 296-62-07155) and maintain records (WAC 296-62-07194);
- You provide additional medical evaluations when required by your PLHCP (WAC 296-62-07156).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07150, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07151 Who must perform medical evaluations? You must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07151, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07152 What information must you provide to the PLHCP in addition to the questionnaire? You must provide the following information to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:

- The questionnaire found in WAC 296-62-07255, Appendix C;

- The type and weight of the respirator to be used by the employee;
- The duration and frequency of respirator use (including use for rescue and escape);
- The expected physical work effort;
- Additional protective clothing and equipment to be worn;
- Temperature and humidity extremes that may be encountered;
- A copy of your written respiratory protection program (including, but not limited to, a list of respirators as required in WAC 296-62-07111(1) and fit testing procedures as required in WAC 296-62-07111(3)); and
- A copy of chapter 296-62 WAC, Part E, Respiratory protection.

When an employee needs a subsequent medical evaluation, you do not have to provide any information previously given to the PLHCP if the information and the PLHCP remain the same.

Note: When you change your PLHCP, you must make sure that the new PLHCP obtains this information, either by providing the documents directly to the PLHCP or having the documents transferred from the former PLHCP to the new PLHCP. WISHA does not expect you to have employees medically reevaluated solely because a new PLHCP has been selected.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07152, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07153 How must the medical evaluations and the questionnaire be administered? (1) An initial evaluation must be completed. You may use the questionnaire in WAC 296-62-07255. It is not necessary to have an initial medical examination. However, an initial medical examination may be substituted for the questionnaire if it obtains the same information. Questions in Section 1 and 2 of Part A must be answered by all respirator users, while questions in Section 3 must be answered by SCBA and full facepiece respirator users. The PLHCP determines what additional questions must be used in the questionnaire from Part B in WAC 296-62-07255.

(2) The medical questionnaire and examinations must be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.

Confidentiality. The medical questionnaire must be administered in a way that makes sure that the employee understands its content. To ensure confidentiality, you must not review an employee's questionnaire at any time. This includes looking at the completed questions or any other interaction that may be considered a breach of confidentiality.

The following are different options that may be used to administer questionnaires confidentially:

- You may administer the questionnaire and arrange for employee access to a PLHCP if there are any questions. For example, you may provide employees a copy of the questionnaire, ask them to fill it out, and place it in a sealed envelope that is sent to the PLHCP.
- Your PLHCP may administer the questionnaire.
- You may hire a third party to confidentially administer the questionnaire.

(3) You must provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07153, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07154 Who must review the questionnaire and determine what, if any, follow-up evaluations are needed? You must provide for the following PLHCP evaluations.

- For the initial medical evaluation, the PLHCP must review the information obtained by the questionnaire in WAC 296-62-07255.

- The PLHCP must provide a follow-up medical evaluation for any employee who gives a positive response to any one of questions 1 through 8 in Section 2 of Part A in WAC 296-62-07255 or whose initial medical evaluation demonstrates the need for follow-up evaluation.

- The follow-up medical evaluation must include any consultations (for example, a telephone conversation to evaluate positive responses on the questionnaire), medical tests, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

Note: When you replace a PLHCP, you must make sure that the new PLHCP obtains this information, either by providing the documents directly to the PLHCP or having the documents transferred from the former PLHCP to the new PLHCP. However, WISHA does not expect you to have employees medically reevaluated solely because a new PLHCP has been selected.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07154, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07155 What must be included in the PLHCP's written recommendation? (1) In determining the employee's ability to use a respirator, you must obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation must provide only the following information about the employee:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;

- The need, if any, for follow-up medical evaluations; and

- A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

(2) You must provide a PAPR, if:

- The respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respirator is used;

- The PLHCP's medical evaluation finds that the employee can use such a respirator. You no longer must provide a PAPR, if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07155, filed 5/4/99, effective 9/1/99.]

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WAC 296-62-07156 When are additional medical evaluations required? At a minimum, you must provide additional medical evaluations that comply with the requirements in WAC 296-62-07151 through 296-62-07155 if:

- An employee reports medical signs or symptoms related to his or her ability to use a respirator;

- A PLHCP, supervisor, or the respirator program administrator informs you that an employee needs to be reevaluated;

- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or

- A change occurs in workplace conditions (for example, physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.

You may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07156, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07160 When is fit testing required? You must make sure that employees using a negative or positive pressure tight-fitting facepiece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT). Fit testing must occur:

- Prior to initial use of the respirator;

- Whenever a different respirator facepiece (size, style, model or make) is used;

- At least annually thereafter; and

- Whenever the employee reports to you or your PLHCP observes changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

You may rely on a current fit test completed by a previous employer for the same employee if you obtain written documentation of the fit test and all other applicable requirements in WAC 296-62-07160 through 296-62-07162 have been satisfied.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07160, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07161 What is required when an employee finds the respirator's fit unacceptable? If after passing a qualitative fit test or a quantitative fit test, your employee subsequently notifies you or your PLHCP that the fit of the respirator is unacceptable, you must give the employee a reasonable opportunity to select a different respirator facepiece and to be retested.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07161, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07162 How must fit testing be done? (1) The fit test must be administered using WISHA-accepted quantitative or qualitative protocol. These protocols are contained in WAC 296-62-07201 through 296-62-07248 (Appendices A-1, A-2 and A-3 of this part).

(2) Qualitative fit testing may be used to fit test negative pressure air-purifying respirators only when they will be used in atmospheres where the concentration is less than 10 times the PEL. For respirator use in higher concentrations, quantitative fit testing must be used.

(3) If the fit factor, as determined through WISHA-accepted quantitative fit testing protocol, is equal to or greater than 100 for tight-fitting half facepieces, or equal to or greater than 500 for tight-fitting full facepieces, the employee passed the quantitative fit test for that respirator.

(4) Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators must be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

(a) Qualitative fit testing of these respirators must be accomplished by temporarily converting the respirator user's actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.

(b) Quantitative fit testing of these respirators must be accomplished by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user, midway between the nose and mouth. This requirement must be accomplished by installing a permanent sampling probe onto a surrogate facepiece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.

(c) Any modifications to the respirator facepiece for fit testing must be completely removed, and the facepiece restored to NIOSH-approved configuration, before that facepiece can be used in the workplace.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07162, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07170 How must you prevent problems with the seal on tight-fitting facepieces? (1) You must not permit respirators with tight-fitting facepieces to be worn during fit testing and respirator use by employees who have:

- Any facial hair that is visibly projecting above the skin (stubble, moustache, sideburns, portions of a beard, low hair-line, bangs) that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or

- Any other condition that interferes with the face-to-facepiece seal or valve function.

(2) If an employee wears corrective glasses or goggles or other personal protective equipment, you must make sure that such equipment is worn in a manner that does not interfere with the seal of the facepiece.

(3) For all tight-fitting respirators, you must make sure that employees perform a user seal check each time they put on the respirator using the procedures in Appendix B-1 or procedures recommended by the respirator manufacturer that you demonstrate are as effective as those in Appendix B-1 of chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07170, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07171 How do you monitor continuing effectiveness of your employees' respirators? (1) You must maintain appropriate surveillance of work area conditions and degree of employee exposure or stress.

(2) When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, you must reevaluate the continued effectiveness of the respirator.

(3) You must make sure that employees leave the respirator use area:

- To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or

- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or

- To replace the respirator or the filter, cartridge, or canister elements; or

- If the employee experiences severe discomfort in wearing the respirator; or

- If the employee becomes ill or experiences sensations of dizziness, nausea, weakness, breathing difficulty, coughing, sneezing, vomiting, fever, and chills.

(4) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, you must replace or repair the respirator before allowing the employee to return to the work area.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07171, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07172 What are the standby procedures when respirators are used in IDLH situations? (1) You must provide standby employees when employees are working in IDLH atmospheres.

In certain IDLH situations, one standby employee is permitted when the IDLH atmosphere is well characterized and you can show that one employee can adequately:

- Monitor the employee(s) in the IDLH atmosphere;
- Implement communication activities; and
- Initiate rescue duties.

For all other IDLH situations, you must have at least two employees located outside the IDLH atmosphere.

(2) Visual, voice, or signal line communication must be maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere.

(3) The employee(s) located outside the IDLH atmosphere must be trained and equipped to provide effective emergency rescue.

(4) You or your designee must be notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.

(5) You or your designee, once notified, must provide necessary assistance appropriate to the situation.

(6) Standby employee(s) located outside the IDLH atmospheres must be equipped with:

- (a) Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

(b) Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or equivalent means for rescue where retrieval equipment is not required.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07172, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07175 How must respirators be cleaned and disinfected? (1) You must provide each respirator user with a respirator that is clean, sanitary, and in good working order.

(2) You must make sure that respirators are cleaned and disinfected using the procedures in WAC 296-62-07253, Appendix B-2, or procedures recommended by the respirator manufacturer, provided that such procedures are as effective.

(3) The respirators must be cleaned and disinfected as follows:

- Respirators issued for the exclusive use of an employee must be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
- Respirators issued to more than one employee must be cleaned and disinfected before being worn by different individuals;
- Respirators maintained for emergency use must be cleaned and disinfected after each use; and
- Respirators used in fit testing and training must be cleaned and disinfected before being worn by a different employee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07175, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07176 How must respirators be stored?

(1) You must make sure that all respirators are stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. You must also make sure that they are packed or stored to prevent deformation of the facepiece and exhalation valve.

(2) When storing emergency respirators.

(a) You must keep respirators accessible to the work area.

(b) You must store respirators in compartments or in covers that are clearly marked as containing emergency respirators.

(c) You must store respirators in accordance with any applicable manufacturer instructions.

(d) You must provide an adequate number of respirators for each work area where they may be needed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07176, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07177 When must respirators be inspected? You must make sure that:

- All respirators used in routine situations are inspected before each use and during cleaning;
- All respirators maintained for use in emergency situations are inspected at least monthly and in accordance with

the manufacturer's recommendations, and are checked for proper function before and after each use;

- Emergency escape-only respirators are inspected before being carried into the workplace for use; and
- Self-contained breathing apparatus (SCBAs) must be inspected monthly.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07177, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07178 How must respirators be inspected and maintained? (1) You must make sure that respirator inspections include:

- A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
- A check of elastomeric parts for pliability and signs of deterioration.

(2) For self-contained breathing apparatus you must:

- Maintain air and oxygen cylinders in a fully charged state and recharge the cylinders when the pressure falls to 90% of the manufacturer's recommended pressure level; and
- Determine that the regulator and warning devices function properly.

(3) For respirators maintained for emergency use, you must:

- Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and
- Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information must be maintained until replaced following a subsequent certification.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07178, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07179 How must respirators be repaired and adjusted? (1) You must make sure that respirators that fail an inspection or are otherwise found to be defective are no longer used until they are repaired or adjusted properly;

(2) Repairs or adjustments to respirators must be made only by persons appropriately trained to perform such operations, who must use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;

(3) Repairs must be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and

(4) Reducing and admission valves, regulators, and alarms must be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07179, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07182 What are the breathing gas requirements for atmosphere-supplying respirators? (1)

You must provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with breathing gases of high purity.

(2) You must make sure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen must meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and

- Compressed breathing air must meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:

- ◆ Oxygen content (v/v) of 19.5-23.5%;
- ◆ Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
- ◆ Carbon monoxide (CO) content of 10 ppm or less;
- ◆ Carbon dioxide content of 1,000 ppm or less; and
- ◆ Lack of noticeable odor.

(3) You must make sure that compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air.

(4) You must make sure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

(5) Cylinders used to supply breathing air to respirators.

(a) Cylinders must be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 173 and Part 178);

(b) Cylinders of purchased breathing air must have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

(c) The moisture content in the cylinder must not exceed a dew point of -50°F (-45.6°C) at 1 atmosphere pressure.

(6) Compressors used to supply breathing air to respirators.

(a) Compressors must be constructed and situated so as to prevent entry of contaminated air into the air-supply system.

(b) Compressors must minimize moisture content so that the dew point at 1 atmosphere pressure is 10°F (5.56°C) below the ambient temperature.

(c) Compressors must have suitable in-line air-purifying sorbent beds and filters to further make sure that the supplied-air is breathing air quality. Sorbent beds and filters must be maintained and replaced or refurbished periodically following the manufacturer's instructions.

(d) Compressors must have a tag containing the most recent sorbent bed and filter change date and the signature of the person authorized by the employer to perform the change. The tag must be maintained at the compressor.

(7) For compressors that are not oil-lubricated, you must make sure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

(8) For oil-lubricated compressors, you must use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply must be monitored at intervals sufficient

to make sure the concentration of carbon monoxide in the breathing air does not exceed 10 ppm.

(9) You must make sure that breathing air couplings are incompatible with outlets for nonrespirable worksite air or other gas systems. Asphyxiating substances must not be introduced into breathing air lines.

(10) You must use breathing gas containers marked in accordance with the NIOSH respirator certification standard, 42 CFR Part 84.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07182, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07184 How must filters, cartridges and canisters be labeled? You must make sure that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approval label. The label must not be removed and must remain legible. Table 3 provides information about color coding for air-purifying respirator filters, cartridges, and canisters.

TABLE 3 — Color Coding of Respirator Filters, Cartridges and Canisters

Atmospheric Contaminants to be Protected Against	Colors Assigned*
Acid gases	White.
Hydrocyanic acid gas	White with 1/2 - inch green stripe completely around the canister near the bottom.
Chlorine gas	White with 1/2 - inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black.
Ammonia gas	Green.
Acid gases and ammonia gas	Green with 1/2 - inch white stripe completely around the canister near the bottom.
Carbon monoxide	Blue.
Acid gases and organic vapors	Yellow.
Hydrocyanic acid gas and chloropicrin vapor	Yellow with 1/2 - inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases	Brown.
Radioactive materials, excepting tritium and noble gases	Purple (Magenta).
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above cases or vapors	Canister color for contaminant, as designated above, with 1/2 - inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with 1/2 - inch gray stripe completely around the canister near the top.

*Gray must not be assigned as the main color for a canister designed to remove acids or vapors.

Note: Orange must be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07184, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07186 What are the general training requirements? (1) You must provide effective training to:

- Employees required to use respirators;
- Supervisors; and
- Any person issuing respirators.

(2) The training must be done so your employees understand it.

(3) The training must be provided by qualified persons.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07186, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07188 How do you know if you adequately trained your employees? At a minimum, you must make certain that each employee can demonstrate:

- Why the respirator is necessary and how improper fit, use, or maintenance can compromise the protective effect of the respirator;

- What the respirator is capable of doing and what its limitations are;

- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;

- How to inspect (see WAC 296-62-07178), put on and remove, use (see WAC 296-62-07170 through 296-62-07172), and check the seals (see WAC 296-62-07251) of the respirator;

- The procedures for maintaining (see WAC 296-62-07175 through 296-62-07179, 296-62-07182(5) and 296-62-07253) and storing (see WAC 296-62-07176) of the respirator;

- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and

- The general requirements of chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07188, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07190 When must your employees be trained? (1) You must train employees before they are required to use a respirator in the workplace.

(2) If you are able to demonstrate that a new employee has received training within the last 12 months that addresses the elements specified in WAC 296-62-07132 and 296-62-07186, then you are not required to repeat the training provided that the employee can demonstrate knowledge of the element(s) required in WAC 296-62-07188.

(3) If you do not repeat initial training for an employee, then you must provide retraining no later than 12 months from the date of the employee's previous training.

(4) Retraining must be completed annually, and when the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete or incomplete;

- The employee's knowledge or use of the respirator indicates that the employee has not retained the understanding or skill as required in WAC 296-62-07188 above; or

- Any other situation arises when retraining appears to be necessary to make sure respirators are used safely.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07190, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07192 How must you evaluate the effectiveness of your respiratory protection program? (1)

You must evaluate the workplace as necessary to make sure that the requirements of the current written program are being effectively carried out and that the program continues to be effective.

(2) Evaluation must include periodic monitoring by the supervisor to make sure respirators are properly worn.

(3) You must regularly ask employees required to use respirators their views on the program's effectiveness and use their input to identify any problems. Any problems identified must be corrected. At a minimum, you must evaluate the following factors:

- Respirator fit (including the employee's ability to use the respirator without interfering with effective workplace performance);

- Appropriate respirator selection for the hazards to which the employee is exposed;

- Proper respirator use under the workplace conditions the employee encounters; and

- Proper respirator maintenance.

(4) Medical and bioassay surveillance. When appropriate, medical surveillance, including bioassays, must be carried out to determine if employees using respirators are receiving adequate respiratory protection. A physician must determine the requirements of the surveillance program.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07192, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07194 What are the recordkeeping requirements? (1) General. You must keep written records of the following:

- Written recommendations from the PLHCP;
- Fit testing;
- The respirator program; and
- Training.

(2) Access to medical records. You must make the written recommendations from the PLHCP and any other medical records you are maintaining available as required by chapter 296-62 WAC, Part B.

(3) Fit testing. You must keep a record of any qualitative and quantitative fit tests completed for each employee. The record must include:

- The name or identification of the employee tested;
- Type of fit test performed;
- Specific make, model, style, and size of respirator tested;
- Date of test; and

• The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.

Fit test records must be retained for respirator users until the next fit test is administered.

(4) You must keep a written copy of the current respirator program.

(5) You must keep written training records that include:

- Names of the employees trained; and
- The dates when the employees were trained.

(6) Written materials required by this part must be made available upon request for examination and copying to affected employees and to the director or the director's designee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07194, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07201 Appendix A-1: General fit testing requirements for respiratory protection—Mandatory. This is a mandatory appendix to chapter 296-62 WAC, Part E, which includes WAC 296-62-07201 through 296-62-07203.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07201, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07202 What are the general requirements for fit testing? (1) You must conduct fit testing using the procedures found in appendices A-1 through A-3. The requirements in these appendices apply to all WISHA-accepted qualitative (QLFT) and quantitative (QNFT) fit test methods.

(2) You must allow your employees to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

(3) Prior to selecting a respirator, you must show your employees how to:

- Put on a respirator;
- Positioned the respirator on the face;
- Set strap tension; and
- Determine an acceptable fit.

(4) You must provide a mirror for your employees to use when evaluating the fit and positioning of the respirator. This instruction does not constitute your employees' formal training on respirator use, because it is only a review.

(5) You must inform your employees that:

- They are being asked to select the respirator that provides the most acceptable fit;
- Each respirator represents a different size and shape; and
- If fitted and used properly, each respirator will provide adequate protection.

(6) You must have your employees hold each chosen facepiece up to their face and eliminate those that obviously do not give an acceptable fit.

(7) You must note the more acceptable facepieces in case the one selected proves unacceptable. The most comfortable mask must be put on and worn at least five minutes to make sure it is comfortable. You must help your employee assess comfort by discussing the points in subsection (8) of this section. If the employee is not familiar with using a particular

respirator, have the employee put on the mask several times and adjust the straps each time to become adept at setting proper tension on the straps.

(8) You must review how to assess the comfort of a respirator by reviewing the following points with the employee and allowing the employee enough time to check the comfort of the respirator chosen:

- (a) Position of the mask on the nose;
- (b) Room for eye protection;
- (c) Room to talk;
- (d) Position of mask on face and cheeks.

(9) You must use the following criteria to determine if the respirator adequately fits each employee:

- (a) Chin properly placed;
- (b) Adequate strap tension, not overly tightened;
- (c) Fit across nose bridge;
- (d) Respirator of proper size to span distance from nose to chin;
- (e) Tendency of respirator to slip;
- (f) Self-observation in mirror to evaluate fit and respirator position.

(10) The employees must complete a user seal check. They must use either the negative and positive pressure seal checks described in WAC 296-62-07251, Appendix B-1 or those recommended by the respirator manufacturer that provide equivalent protection to the procedures in WAC 296-62-07251, Appendix B-1. Before conducting the negative and positive pressure checks, the employee must be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece must be selected and retested if the employee's respirator fails the user seal check tests.

(11) You must not conduct the fit test if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns that cross the respirator sealing surface. Any type of apparel that interferes with a satisfactory fit must be altered or removed.

(12) If the employee has difficulty in breathing during the tests, you must refer the employee to a physician or other licensed health care professional, as appropriate, to determine whether the employee can wear respirators while performing the employee's duties.

(13) If the employee finds the fit of the respirator unacceptable, you must give the employee the opportunity to select a different respirator and the employee must be retested.

- (14) Prior to starting the fit test, you must describe the:
- Fit test to the employee;
 - Employee's responsibilities during the test procedure; and
 - Test exercises that the employee will be performing.

(15) The employee must wear the respirator at least 5 minutes before starting the fit test.

(16) When performing the fit test, you must have your employee wear any applicable safety equipment that may be worn during actual respirator use that could interfere with respirator fit.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07202, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07203 What are the fit test exercise requirements? (1) You must have your employees perform the following test exercises for all fit testing methods required in the appendices for Respiratory Protection Part E, except for the controlled negative pressure (CNP) testing. The CNP protocol contains a different fit testing exercise regimen. The employee must perform exercises, in the test environment, in the following ways:

(a) Normal breathing. In a normal standing position, without talking, the employee must breathe normally.

(b) Deep breathing. In a normal standing position, the employee must breathe slowly and deeply, taking caution so as not to hyperventilate.

(c) Turning head side to side. Standing in place, the employees must slowly turn their heads from side to side between the extreme positions on each side, holding their heads at each extreme momentarily so they can inhale at each side.

(d) Moving head up and down. Standing in place, the employees must slowly move their heads up and down, inhaling in the up position (when looking toward the ceiling).

(e) Talking. The employee must talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The employee can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(f) Grimace. The employee must grimace by smiling or frowning (this applies only to QNFT testing; it is not performed for QLFT).

(g) Bending over. Employees must bend at their waist as if they were touching their toes. Jogging in place must be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(h) Normal breathing. Repeat exercise (a) for normal breathing.

(2) Each test exercise must be performed for one minute except for the grimace exercise, which must be performed for 15 seconds.

(3) You must question the employee about the comfort of the respirator after completing the test exercises. If the respirator has become unacceptable, you must try another model of respirator.

(4) Any adjustments during fit testing will void the test, making it necessary to begin again.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07203, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07205 Appendix A-2: Qualitative fit testing (QLFT) protocols for respiratory protection—Mandatory. This is a mandatory appendix to chapter 296-62 WAC, Part E, which includes WAC 296-62-07205 through 296-62-07225.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07205, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07206 What are the general qualitative fit testing (QLFT) protocols? (1) You must make sure the person who administers QLFT is able to:

- Prepare test solutions;
- Calibrate equipment and perform tests properly;
- Recognize invalid tests; and
- Make sure that test equipment is in proper working order.

(2) You must make sure that QLFT equipment is kept clean and well maintained so it operates within the parameters for which it was designed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07206, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07208 Isoamyl acetate protocol (a QLFT).

Note: You must equip particulate respirators with an organic vapor cartridge or canister when using the isoamyl acetate protocol for fit testing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07208, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07209 What are the odor threshold screening procedures for isoamyl acetate (QLFT)? (1) Why use odor threshold screening?

Odor threshold screening, performed without wearing a respirator, determines if the employee tested can detect the odor of isoamyl acetate at low levels.

(2) How are the test solutions for odor threshold screening prepared?

(a) Use three 1 liter glass jars with metal lids.

(b) Use odor-free water (for example, distilled or spring water) at approximately 25°C (77°F) for preparing the solutions.

(c) Stock solution: Prepare the isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution by:

- Adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar;
- Closing the lid; and
- Shaking for 30 seconds.

A new stock solution must be prepared at least weekly.

(d) Daily test solution: Prepare the daily odor test solution in a second jar by placing 0.4 ml of the IAA stock solution into 500 ml of odor-free water using a clean dropper or pipette. Shake the solution for 30 seconds and allow it to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. The daily test solution must be used for only one day.

(e) Prepare a test blank in a third jar by adding 500 cc of odor-free water.

(f) Clearly label and identify the daily odor test solution and test blank jar lids (for example, 1 and 2). Place the labels

on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

(g) Prepare the solutions used in the IAA odor detection test in an area separate from where the test is performed, in order to prevent olfactory (smelling) fatigue in the employee.

(3) What are the odor threshold screening procedures?

(a) Conduct the screening test in a different room from the one used for actual fit testing. The two rooms must be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

(b) Type the following instructions on a card and place them on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."

(c) If the employee is unable to correctly identify the jar containing the odor test solution, do not perform the IAA qualitative fit test.

(d) If the employee correctly identifies the jar containing the odor test solution, the employee may proceed to respirator selection and fit testing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07209, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07210 What are the isoamyl acetate fit testing procedures (QLFT)? (1) The fit test chamber must be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the employee's head. If no drum liner is available, construct a similar chamber using plastic sheeting.

(2) Attach a small hook to the inside top center of the chamber.

(3) Equip each respirator used for the fitting and fit testing with organic vapor cartridges or offer protection against organic vapors.

(4) After selecting, putting on, and properly adjusting a respirator, the employee must wear it to the fit testing room.

(5) This room used for fit testing must be separate from the room used for odor threshold screening and respirator selection. It must be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(6) A copy of the test exercises and any prepared text from which the employee is to read must be taped to the inside of the test chamber.

(7) Upon entering the test chamber, give the employee a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA.

(8) Have the employee hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equal to that generated by the paper towel method.

(9) Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be

an appropriate time to talk with the employee; to explain the fit test, the importance of the employee's cooperation in the fit test, and the purpose for the test exercises; or to demonstrate some of the exercises.

(10) If at any time during the test, the employee detects the banana-like odor of IAA, the test is failed. The employee must quickly exit from the test chamber and leave the test area to avoid olfactory (smelling) fatigue.

(11) If the test is failed, the employee must return to the selection room and remove the respirator. The employee must:

- Repeat the odor sensitivity test;
- Select and put on another respirator;
- Return to the test area; and
- Again begin the fit test procedure described in subsections (1) through (8) of this section.

The process continues until a respirator that fits well has been found.

(12) Should the odor sensitivity test be failed, the employee must wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(13) If the employee passes the test, the efficiency of the test procedure must be demonstrated by having the employee break the respirator face seal and take a breath before exiting the chamber.

(14) When the employee leaves the chamber, the employee must remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests.

(15) The used towels must be kept in a self-sealing plastic bag to keep the test area from being contaminated.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07210, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07212 Saccharin solution aerosol protocol (QLFT). The entire screening and testing procedure must be explained to the employee prior to conducting the screening test.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07212, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07213 What are the taste threshold screening procedures for saccharin (QLFT)? (1) Why use saccharin taste threshold screening?

The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the employee being tested can detect the taste of saccharin.

(2) What are the saccharin solution aerosol procedures?

(a) During threshold screening as well as during fit testing, the employee must wear an enclosure over the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts #FT 14 and #FT 15 combined, is adequate.

(b) The test enclosure must have a 3/4-inch (1.9 cm) hole in front of the employee's nose and mouth area to accommodate the nebulizer nozzle.

(c) Have the employee put on the test enclosure.

(d) Throughout the threshold screening test, the employee must breathe through a slightly open mouth with tongue extended.

(e) Instruct the employees to report when they detect a sweet taste.

(f) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer must be clearly marked to distinguish it from the fit test solution nebulizer.

(g) Saccharin threshold check solution. Prepare the threshold check solution by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution in 100 ml of distilled water.

(h) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(i) Ten squeezes are repeated rapidly and then the employee is asked whether the saccharin can be tasted. If the employee tastes a sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(j) If the first response is negative, ten more squeezes are repeated rapidly and the employee is again asked whether the saccharin is tasted. If the employee tastes a sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(k) If the second response is negative, ten more squeezes are repeated rapidly and the employee is again asked whether the saccharin is tasted. If the employee tastes a sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(l) Note the number of squeezes required to solicit a taste response.

(m) If the saccharin is not tasted after 30 squeezes (step k), the employee is unable to taste saccharin and must not perform the saccharin fit test.

Note: If employees eat or drink something sweet before the screening test, they may be unable to taste the weak saccharin solution.

(n) If a taste response is elicited, ask the employee to take note of the taste for reference in the fit test.

(o) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(p) The nebulizer must be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07213, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07214 What is the saccharin solution aerosol fit testing procedure (QLFT)? (1) The employee must not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in WAC 296-62-07210.

(3) Have the employee put on the enclosure while wearing the respirator selected in WAC 296-62-07202. The respirator must be properly adjusted and equipped with a particulate filter(s).

(4) Use a second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent to spray the fit test solution into the enclosure. Clearly mark this nebulizer to distinguish it from the screening test solution nebulizer.

(5) Prepare the fit test solution adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the employees must breathe through a slightly open mouth with tongue extended, and report if they taste the sweet taste of saccharin.

(7) Insert the nebulizer into the hole in the front of the enclosure and spray an initial concentration of saccharin fit test solution into the enclosure.

(8) Use the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

(9) After generating the aerosol, instruct the employee to perform the exercises in WAC 296-62-07202.

(10) Replenish the aerosol concentration every 30 seconds using one half the original number of squeezes used initially (for example, 5, 10 or 15).

(11) Instruct the employees to tell you if at any time during the fit test the taste of saccharin is detected. If the employee does not detect tasting the saccharin, the test is passed.

(12) If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator must be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

(13) Since the nebulizer has a tendency to clog during use, periodically check the nebulizer to make sure that it is not clogged. If the nebulizer is clogged at the end of the test session, the test is invalid.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07214, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07217 Bitrex™ (denatonium benzoate) solution aerosol qualitative fit testing (QLFT) protocol.

General information. The Bitrex™ (denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex™ is routinely used as a taste aversion agent in household liquids that children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure must be explained to the employee prior to the conduct of the screening test.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07217, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07218 What is the taste threshold screening procedure for Bitrex™ (QLFT)? (1) Why use odor threshold screening?

The Bitrex™ taste threshold screening, performed without wearing a respirator, is intended to determine whether the employee being tested can detect the taste of Bitrex™.

(2) What are the taste threshold screening procedures for Bitrex™ (QLFT)?

(a) During threshold screening as well as during fit testing, employees must wear an enclosure over the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure must be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts #14 and #15 combined, is adequate.

(b) The test enclosure must have a 3/4-inch (1.9 cm) hole in front of the employee's nose and mouth area to accommodate the nebulizer nozzle.

(c) Have the employee put on the test enclosure.

(d) Throughout the threshold screening test, the employees must breathe through a slightly open mouth with tongue extended.

(e) Instruct the employees to tell you when they detect a bitter taste.

(f) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, spray the threshold check solution into the enclosure. Clearly mark this nebulizer to distinguish it from the fit test solution nebulizer.

(g) Prepare the threshold check solution by adding 13.5 milligrams of Bitrex™ to 100 ml of 5% salt (NaCl) solution in distilled water.

(h) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

(i) Rapidly repeat an initial ten squeezes and then ask the employee if the Bitrex™ can be tasted. If the employee reports tasting the bitter taste during the ten squeezes, the screening test is completed. Note the taste threshold as ten regardless of the number of squeezes actually completed.

(j) If the first response is negative, rapidly repeat ten more squeezes and ask the employee if the Bitrex™ is tasted. If the employee reports tasting the bitter taste during the second ten squeezes, the screening test is completed. Note the taste threshold as twenty regardless of the number of squeezes actually completed.

(k) If the second response is negative, rapidly repeat ten more squeezes and ask the employee if the Bitrex™ is tasted. If the employee reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. Note the taste threshold as thirty regardless of the number of squeezes actually completed.

(l) Note the number of squeezes required to solicit a taste response.

(m) If the Bitrex™ is not tasted after 30 squeezes (step k), the employee is unable to taste Bitrex™ and must not perform the Bitrex™ fit test.

(n) If a taste response is elicited, ask the employee to take note of the taste for reference in the fit test.

(o) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(p) The nebulizer must be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07218, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07219 What is the Bitrex™ solution aerosol fit testing procedure (QLFT)? (1) The employee must not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in WAC 296-62-07210.

(3) Have the employee put on the enclosure while wearing the respirator selected according to WAC 296-62-07202. The respirator must be properly adjusted and equipped with any type particulate filter(s).

(4) Use a second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent to spray the fit test solution into the enclosure. Clearly mark this nebulizer to distinguish it from the screening test solution nebulizer.

(5) Prepare the fit test solution by adding 337.5 mg of Bitrex™ to 200 ml of a 5% salt (NaCl) solution in warm water.

(6) As before, the employees must breathe through a slightly open mouth with tongue extended.

(7) Instruct the employees to tell you when they detect the bitter taste of Bitrex™.

(8) Insert the nebulizer into the hole in the front of the enclosure. Spray an initial concentration of the fit test solution into the enclosure. Use the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required for the employee to taste the bitter tastes as noted during the screening test.

(9) After generating the aerosol, instruct the employee to perform the exercises in WAC 296-62-07203.

(10) Replenish the aerosol concentration every 30 seconds using one half the number of squeezes used initially (for example, 5, 10 or 15).

(11) Have the employees tell you if at any time during the fit test they taste the bitter taste of Bitrex™. If the employee does not detect tasting the Bitrex™, the test is passed.

(12) If the taste of Bitrex™ is tasted, the fit is deemed unsatisfactory and the test is failed. A different respirator must be tried and the entire test procedures must be repeated (taste threshold screening and fit testing).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07219, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07222 Irritant smoke (stannic chloride) protocol (QLFT). This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07222, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07223 What are the general requirements and precautions for irritant smoke fit testing (QLFT)? (1) The respirator to be tested must be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

(2) Use only stannic chloride smoke tubes for this protocol.

(3) Do not use any form of a test enclosure or hood.

(4) The smoke can be irritating to the eyes, lungs, and nasal passages. Take precautions to minimize the employee's exposure to irritant smoke. Sensitivity varies, and certain employees may respond to a greater degree to irritant smoke. Care must be taken when performing the sensitivity screening checks to use only the minimum amount of smoke necessary to elicit a response from the employee. Sensitivity screening checks determine whether the employee can detect the irritant smoke.

(5) The fit test must be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07223, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07224 What is the sensitivity screening check protocol for irritant smoke (QLFT)? (1) Why use irritant smoke sensitivity screening checks?

Employees must be tested to see if they can detect a weak concentration of the irritant smoke.

(2) What are the sensitivity screening check procedures?

(a) Break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb.

(b) Cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

(c) Advise the employees that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct them to keep their eyes closed while the test is performed.

(d) Allow the employee to smell a weak concentration of the irritant smoke before putting on a respirator to become familiar with its irritating properties and determine if they can detect the irritating properties of the smoke.

(e) Carefully direct a small amount of the irritant smoke toward the employees being tested to see if they can detect it.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07224, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07225 What is the irritant smoke fit testing procedure (QLFT)? (1) Have the employee put on the respirator without assistance, and perform the required user seal check(s).

(2) Instruct the employees to keep their eyes closed.

(3) Direct the stream of irritant smoke from the smoke tube toward the face seal area of the employee, using the low flow pump or the squeeze bulb. Begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. Gradually make two more passes

around the perimeter of the mask, moving to within six inches of the respirator.

(4) If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

(5) Have the employee perform the exercises required in WAC 296-62-07203 while the respirator seal is being continually challenged by the smoke. Direct the smoke around the perimeter of the respirator at a distance of six inches.

(6) If the employee being fit tested detects the irritant smoke at any time, the test is failed. An employee being retested must repeat the entire sensitivity check and fit test procedures.

(7) Have the employee remove the respirator.

(8) Give employees passing the irritant smoke test without evidence of a response (involuntary cough, irritation) a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test to determine if they still react to the smoke. The fit test is void if an employee does not respond to the smoke.

(9) If the employee responds to the second sensitivity check, then the fit test is passed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07225, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07230 Appendix A-3: Quantitative fit testing (QNFT) protocols for respiratory protection—Mandatory. This is a mandatory appendix to chapter 296-62 WAC, Part E, which includes WAC 296-62-07230 through 296-62-07248.

The following quantitative fit testing procedures are acceptable protocols:

- Nonhazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator;
- Ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit;
- Controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07230, filed 5/4/99, effective 9/1/99.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-07231 What are the general requirements for quantitative fit testing (QNFT)? (1) You must make sure that persons administering QNFT are able to:

- Calibrate equipment and perform tests properly;
- Recognize invalid tests;
- Calculate fit factors properly; and
- Make sure that test equipment is in proper working order.

(2) You must make sure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07231, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07233 Generated aerosol quantitative fit testing protocol (QNFT).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07233, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07234 What equipment is required for generated aerosol fit testing (QNFT)? (1) Instrumentation. Use aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols for quantitative fit testing.

(2) Test chamber.

(a) The test chamber must be large enough to permit all employees to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus.

(b) The test chamber must be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(3) When testing air-purifying respirators, replace the normal filter or cartridge element with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.

(4) Select the sampling instrument so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.

(5) Do not expose the employee to any combination of substitute air-purifying elements, test agent and test agent concentration in excess of an established exposure limit for the test agent at any time during the testing process. Base the employee's exposure on the length of the exposure and the exposure limit duration.

(6) Construct the sampling port and place it on the test specimen respirator so that:

- No leaks occurs around the port (for example, where the respirator is probed);
- A free air flow is allowed into the sampling line at all times; and
- There is no interference with the fit or performance of the respirator.

The in-mask sampling device (probe) must be designed and used so that the air sample is drawn from the breathing zone of the employee, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4-inch.

(7) The person administering the fit test must be able to observe the employee inside the chamber during the test.

(8) The equipment generating the test atmosphere must maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.

(9) Keep the time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) to a minimum. You must be able to clearly see when

an event occurs and when it is recorded on the strip chart or computer.

(10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port must be:

- Equal in diameter;
- Made of the same material; and
- Equal in length.

(11) The exhaust flow from the test chamber must pass through an appropriate filter (i.e., high efficiency particulate filter) before release.

(12) When sodium chloride aerosol is used, the relative humidity inside the test chamber must not exceed 50 percent.

(13) Take into account the limitations of instrument detection when determining the fit factor.

(14) Test respirators must be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07234, filed 5/4/99, effective 9/1/99.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-07235 What are the procedures for generated aerosol quantitative fit testing (QNFT)? (1) When performing the initial user seal check using a positive or negative pressure check, crimp the sampling line in order to avoid air pressure leakage during either of these pressure checks.

(2) Using an abbreviated screening QLFT test is optional. You may use a QLFT screening test to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. Another option is to use the CNC QNFT instrument in the count mode to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.

(3) A reasonably stable test agent concentration must be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, determine the test agent's stability after the employee has entered the test environment.

(4) Immediately after the employee enters the test chamber, measure the test agent concentration inside the respirator to make sure that the peak penetration does not exceed 5 percent for a half-mask or 1 percent for a full facepiece respirator.

(5) Obtain a stable test agent concentration prior to the actual start of testing.

(6) Do not over-tighten respirator restraining straps for testing. Have the employee adjust the straps, without assistance, to give a reasonably comfortable fit typical of normal use.

(7) Do not adjust the respirator once the fit test exercises begin.

(8) Stop the test whenever any single peak penetration exceeds 5 percent for half-masks and 1 percent for full facepiece respirators. The employee must be refitted and retested.

(9) Do not permit the employee to wear a half-mask or quarter facepiece respirator unless:

- A minimum fit factor of 100 is obtained; or

- A full facepiece respirator unless a minimum fit factor of 500 is obtained.

(10) Filters used for quantitative fit testing must be replaced whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07235, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07236 How are fit factors calculated (QNFT)? (1) Determine the fit factor for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.

(2) Calculate the average test chamber concentration using one of the following:

- Arithmetic average of the concentration measured before and after each test (i.e., 7 exercises); or
- Arithmetic average of the concentration measured before and after each exercise; or
- True average measured continuously during the respirator sample.

(3) Determine the concentration of the challenge agent inside the respirator by one of the following methods:

(a) Average peak penetration method. Average peak penetration method determines how much test agent penetrates into the respirator using a strip chart recorder, integrator, or computer. Determine the agent penetration averaging the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise also will meet the requirements of the average peak penetration method.

(b) Maximum peak penetration. Maximum peak penetration method determines how much test agent penetrates into the respirator using a strip chart recordings of the test. The highest peak penetration for a given exercise represents the average penetration into the respirator for that exercise.

(c) Area under the peaks. Integrate the area under the individual peak for each exercise except the grimace exercise using computerized integration or other appropriate calculations.

(d) Overall fit factor. Calculate the overall fit factor using individual exercise fit factors.

- Convert the exercise fit factors to the penetration values.
- Determine the average.
- Then convert the average result back to a fit factor.

Use the following equation to calculate overall fit factor:

$$\text{Overall Fit Factor} = \frac{\text{Number of exercises}}{1/ff_1 + 1/ff_2 + 1/ff_3 + 1/ff_4 + 1/ff_5 + 1/ff_6 + 1/ff_7 + 1/ff_8}$$

Where ff_1 , ff_2 , ff_3 , etc. are the fit factors for exercises 1, 2, 3, etc.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07236, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07238 Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07238, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07239 General information about ambient aerosol condensation nuclei counter (CNC) protocol (QNFT). (1) The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount™) protocol uses a probe to quantitatively fit tests respirators. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask.

(2) The probed respirator is only used for quantitative fit tests.

(3) A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor.

(4) The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07239, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07240 What are the general requirements for ambient aerosol condensation nuclei counter (CNC) protocol (QNFT)? (1) A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator.

(2) A minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator.

(3) The entire screening and testing procedure must be explained to the employee prior to the conduct of the screening test.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07240, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07242 What are the Portacount fit testing procedures? (1) Check the respirator to make sure the:

- Sampling probe and line are properly attached to the facepiece; and
- Respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (for example, NIOSH 42 CFR 82 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.

(2) Instruct the employee to put on the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the employee to make certain the respirator is comfortable. Before fit testing, train the employee on how to wear the respirator properly.

(3) Check the following conditions for the adequacy of the respirator fit:

- Chin properly placed;
- Adequate strap tension, not overly tightened;
- Fit across nose bridge;
- Respirator of proper size to span distance from nose to chin;
- Tendency of the respirator to slip;
- Self-observation in a mirror to evaluate fit and respirator position.

(4) Have the employee do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.

(5) Follow the manufacturer's instructions for operating the Portacount and begin the test.

(6) Have the employee perform the exercises in WAC 296-62-07203.

(7) After the test exercises, ask the employee about comfort of the respirator. If the respirator is unacceptable, try another model of respirator.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07242, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07243 How is the Portacount test instrument used? (1) The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The pass or fail message will indicate whether or not the test was successful. If the test was a pass, the fit test is over.

(2) Since the pass or fail criterion of the Portacount is user programmable, you must make sure that the pass or fail criterion meets the requirements for minimum respirator performance in WAC 296-62-07235.

(3) Keep a record of successful fit tests on file. The record must contain:

- The employee's name;
- Overall fit factor;
- Make, model, style, and size of respirator used; and
- Date tested.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07243, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07245 Controlled negative pressure (CNP) quantitative fit testing protocol (QNFT). The CNP protocol provides an alternative to aerosol fit test methods.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07245, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07246 How does controlled negative pressure (CNP) fit testing work (QNFT)? (1) The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator.

(2) The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators.

(3) Manufacturer attachments. The CNP instrument manufacturer Dynatech Nevada also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator.

(4) Performing the test. To perform the test, the employees close their mouths and hold their breath, after which an

air pump removes air from the respirator facepiece at a preselected constant pressure.

(5) Facepiece fit. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute.

(6) The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07246, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07247 What are the controlled negative pressure (CNP) fit testing requirements and procedures (QNFT)? (1) Fit factor.

- A minimum fit factor pass level of 100 is necessary for a half-mask respirator.
- A minimum fit factor of at least 500 is required for a full facepiece respirator.

(2) The entire screening and testing procedure must be explained to the employee prior to the conduct of the screening test.

(3) The instrument must have a nonadjustable test pressure of 15.0 mm water pressure.

(4) When performing fit tests, set the CNP system defaults at:

- 15 mm of water (-0.58 inches of water) test pressure and
- 53.8 liters per minute for the modeled inspiratory flow rate.

Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.

(5) The person conducting the CNP fit testing must be thoroughly trained to perform the test.

(6) Replace the respirator filter or cartridge with the CNP test manifold. Temporarily remove or prop open the inhalation valve downstream from the manifold.

(7) Train employees to hold their breath for at least 20 seconds.

(8) Have the employee put on the test respirator without any assistance from the individual who conducts the CNP fit test.

(9) The QNFT protocol must be followed according to WAC 296-62-07231 with an exception for the CNP test.

(10) The test instrument must have an effective audio warning device when the employee fails to hold his or her breath during the test.

(11) Stop the test whenever the employees fail to hold their breath. The employees must be refitted and retested.

(12) A record of the test must be kept on file, assuming the fit test was successful. The record must contain the employee's name; overall fit factor; make, model, style and size of respirator used; and date tested.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07247, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07248 What test exercises are required for controlled negative pressure (CNP) fit testing (QNFT)?

(1) Normal breathing. In a normal standing position, without talking, the employees must breathe normally for 1 minute. After the normal breathing exercise, the employees must hold their head straight ahead and hold their breath for 10 seconds during the test measurement.

(2) Deep breathing. In a normal standing position, the employees must breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the employees must hold their head straight ahead and hold their breath for 10 seconds during test measurement.

(3) Turning head side to side.

- Standing in place, the employees must slowly turn their heads from side to side between the extreme positions on each side for 1 minute, holding their heads each extreme momentarily so they can inhale at each side.
- After the turning head side to side exercise, have the employees hold their heads full left and hold their breath for 10 seconds during test measurement.
- Next, have the employees need to hold their head full right and hold their breath for 10 seconds during test measurement.

(4) Moving head up and down.

- Standing in place, the employees must slowly move their heads up and down for 1 minute.
- Instruct the employee to inhale in the up position (when looking toward the ceiling).
- After the moving head up and down exercise, the employees must hold their heads full up and hold their breath for 10 seconds during test measurement.
- Next, the employees must hold their heads full down and hold their breath for 10 seconds during test measurement.

(5) Talking. The employee must talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The employee can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the employee must hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(6) Grimace. The employee must grimace by smiling or frowning for 15 seconds.

(7) Bending over. Employees must bend at the waist as if they were touching their toes for 1 minute. Jogging in place must be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the employees must hold their head straight ahead and hold their breath for 10 seconds during the test measurement.

(8) Normal breathing.

- The employee must remove and put on the respirator again within a one-minute period.
- Then, in a normal standing position, without talking, the employee must breathe normally for 1 minute.
- After the normal breathing exercise, the employee must hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(9) After the test exercises, question the employee about the comfort of the respirator. If the respirator has become unacceptable, another model of a respirator must be tried.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07248, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07251 Appendix B-1: User seal check procedures—Mandatory. This is a mandatory appendix to chapter 296-62 WAC, Part E.

The individual who uses a tight-fitting respirator must perform a user seal check to make sure that the respirator makes an adequate seal each time it is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method must be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

(1) Facepiece positive and/or negative pressure checks.

(a) Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve. The face fit is considered adequate if a slight positive pressure (inflation) can be built up inside the facepiece without any evidence of outward leakage of air at the seal. Carefully replace the exhalation valve cover, if it was removed, after the test.

(b) Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. If the design of the inlet opening of the cartridges cannot be effectively covered with the palm of the hand, cover the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

(2) Manufacturer's recommended user seal check procedures. The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures describe above provided that you demonstrate that the manufacturer's procedures are equally effective.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07251, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07253 Appendix B-2: Respirator cleaning procedures—Mandatory. This is a mandatory appendix to chapter 296-62 WAC, Part E.

(1) These procedures are provided for you to use when cleaning respirators. They are general in nature, and as an alternative you may use the cleaning recommendations provided by the manufacturer of the respirators used by your employees, if the manufacturer's procedures are as effective as those listed here in Appendix B-2. Procedures are as effective when they meet the requirements in Appendix B-2, i.e., that must make sure that the respirator is properly cleaned and disinfected so that the respirator is not damaged and does no harm to the user.

(2) Procedures for cleaning respirators.

(a) Remove filters, cartridges, or canisters. Remove speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

(b) Wash components in warm (43°C [110°F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

(c) Rinse components thoroughly in clean, warm (43°C [110°F] maximum), preferably running water. Drain.

(d) When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

(i) Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43°C (110°F); or,

(ii) Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43°C (110°F); or,

(iii) Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

(e) Rinse components thoroughly in clean, warm (43°C [110°F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

(f) Components should be hand-dried with a clean lint-free cloth or air-dried.

(g) Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

(h) Test the respirator to make sure that all components work properly.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07253, filed 5/4/99, effective 9/1/99.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-07255 Appendix C: WISHA respirator medical evaluation questionnaire—Mandatory. This is a mandatory appendix to chapter 296-62 WAC, Part E.

To the employer:

You must not review employee questionnaires.

To the employer's PLHCP:

Answers to questions in Section 1 and question 9 in Section 2 of Part A do not require further medical evaluations.

To the employee:

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your

answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. Mandatory

The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
 2. Your name: _____
 3. Your age (to nearest year): _____
 4. Sex (circle one): Male/Female
 5. Your height: _____ ft. in.
 6. Your weight: _____ lbs.
 7. Your job title: _____
 8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____
 9. The best time to phone you at this number: _____
 10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
 11. Check the type of respirator you will use (you can check more than one category):
 - a. N, R, or P disposable respirator (dust mask style, half facepiece respirators without cartridges).
 - b. Check all that apply.
 - Half mask Full facepiece Helmet hood Escape mask
 - Nonpowered cartridge or canister
 - Powered air-purifying cartridge respirator (PAPR)
 - Supplied-air or Air-line
 - Disposable filtering facepiece (for example N-95)
 - Self contained breathing apparatus Demand or Pressure demand (SCBA):
- Other: _____

12. Have you worn a respirator (circle one): Yes/No
- If "yes," what type(s): _____

Part A. Section 2. Mandatory

Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month: Yes/No
2. Have you *ever had* any of the following conditions?
 - a. Seizures (fits): Yes/No
 - b. Diabetes (sugar disease): Yes/No
 - c. Allergic reactions that interfere with your breathing: Yes/No
 - d. Claustrophobia (fear of closed-in places): Yes/No
 - e. Trouble smelling odors: Yes/No

3. Have you *ever had* any of the following pulmonary or lung problems?

- a. Asbestosis: Yes/No
- b. Asthma: Yes/No
- c. Chronic bronchitis: Yes/No
- d. Emphysema: Yes/No
- e. Pneumonia: Yes/No
- f. Tuberculosis: Yes/No
- g. Silicosis: Yes/No
- h. Pneumothorax (collapsed lung): Yes/No
- i. Lung cancer: Yes/No
- j. Broken ribs: Yes/No
- k. Any chest injuries or surgeries: Yes/No
- l. Any other lung problem that you've been told about: Yes/No

4. Do you *currently* have any of the following symptoms of pulmonary or lung illness?

- a. Shortness of breath: Yes/No
- b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
- c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
- d. Have to stop for breath when walking at your own pace on level ground: Yes/No
- e. Shortness of breath when washing or dressing yourself: Yes/No
- f. Shortness of breath that interferes with your job: Yes/No
- g. Coughing that produces phlegm (thick sputum): Yes/No
- h. Coughing that wakes you early in the morning: Yes/No
- i. Coughing that occurs mostly when you are lying down: Yes/No
- j. Coughing up blood in the last month: Yes/No
- k. Wheezing: Yes/No
- l. Wheezing that interferes with your job: Yes/No
- m. Chest pain when you breathe deeply: Yes/No
- n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you *ever had* any of the following cardiovascular or heart problems?

- a. Heart attack: Yes/No
- b. Stroke: Yes/No
- c. Angina: Yes/No
- d. Heart failure: Yes/No
- e. Swelling in your legs or feet (not caused by walking): Yes/No
- f. Heart arrhythmia (heart beating irregularly): Yes/No
- g. High blood pressure: Yes/No
- h. Any other heart problem that you've been told about: Yes/No

6. Have you *ever had* any of the following cardiovascular or heart symptoms?

- a. Frequent pain or tightness in your chest: Yes/No
- b. Pain or tightness in your chest during physical activity: Yes/No
- c. Pain or tightness in your chest that interferes with your job: Yes/No
- d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No

e. Heartburn or indigestion that is not related to eating: Yes/No

f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you *currently* take medication for any of the following problems?

- a. Breathing or lung problems: Yes/No
- b. Heart trouble: Yes/No
- c. Blood pressure: Yes/No
- d. Seizures (fits): Yes/No

8. If you've used a respirator, have you *ever had* any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

- a. Eye irritation: Yes/No
- b. Skin allergies or rashes: Yes/No
- c. Anxiety: Yes/No
- d. General weakness or fatigue: Yes/No
- e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Part A. Section 3. Mandatory for SCBA or Full Facepiece Respirator Users

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you *ever lost* vision in either eye (temporarily or permanently): Yes/No

11. Do you *currently* have any of the following vision problems?

- a. Wear contact lenses: Yes/No
- b. Wear glasses: Yes/No
- c. Color blind: Yes/No
- d. Any other eye or vision problem: Yes/No

12. Have you *ever had* an injury to your ears, including a broken ear drum: Yes/No

13. Do you *currently* have any of the following hearing problems?

- a. Difficulty hearing: Yes/No
- b. Wear a hearing aid: Yes/No
- c. Any other hearing or ear problem: Yes/No

14. Have you *ever had* a back injury: Yes/No

15. Do you *currently* have any of the following musculoskeletal problems?

- a. Weakness in any of your arms, hands, legs, or feet: Yes/No
- b. Back pain: Yes/No
- c. Difficulty fully moving your arms and legs: Yes/No
- d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
- e. Difficulty fully moving your head up or down: Yes/No

- f. Difficulty fully moving your head side to side: Yes/No
- g. Difficulty bending at your knees: Yes/No
- h. Difficulty squatting to the ground: Yes/No
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
- j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B: PLHCP Discretionary Questions

If appropriate to specific job requirements or conditions, additional questions - including but not limited to the following - may be added at the discretion of the health care professional to clarify an employee's ability to use a respirator.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (for example, gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

If "yes," name the chemicals if you know them: _____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- a. Asbestos: Yes/No
- b. Silica (for example, in sandblasting): Yes/No
- c. Tungsten/cobalt (for example, grinding or welding this material): Yes/No
- d. Beryllium: Yes/No
- e. Aluminum: Yes/No
- f. Coal (for example, mining): Yes/No
- g. Iron: Yes/No
- h. Tin: Yes/No
- i. Dusty environments: Yes/No
- j. Any other hazardous exposures: Yes/No

If "yes," describe these exposures: _____

4. List any second jobs or side businesses you have: _____

5. List your previous occupations: _____

6. List your current and previous hobbies: _____

7. Have you been in the military services? Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes," name the medications if you know them: _____

10. Will you be using any of the following items with your respirator(s)?

- a. HEPA Filters: Yes/No
- b. Canisters (for example, gas masks): Yes/No
- c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

- a. Escape only (no rescue): Yes/No
- b. Emergency rescue only: Yes/No
- c. Less than 5 hours *per week*: Yes/No
- d. Less than 2 hours *per day*: Yes/No
- e. 2 to 4 hours per day: Yes/No
- f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

a. *Light* (less than 200 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of a light work effort are *sitting* while writing, typing, drafting, or performing light assembly work; or *standing* while operating a drill press (1-3 lbs.) or controlling machines.

b. *Moderate* (200 to 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of moderate work effort are *sitting* while nailing or filing; *driving* a truck or bus in urban traffic; *standing* while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; *walking* on a level surface about 2 mph or down a 5-degree grade about 3 mph; or *pushing* a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. *Heavy* (above 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of heavy work are *lifting* a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; *shoveling*; *standing* while bricklaying or chipping castings; *walking* up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No

If "yes," describe this protective clothing and/or equipment:

14. Will you be working under hot conditions (temperature exceeding 77°F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance:
Estimated maximum exposure level per shift:
Duration of exposure per shift:

Name of the second toxic substance:
Estimated maximum exposure level per shift:
Duration of exposure per shift:

Name of the third toxic substance:
Estimated maximum exposure level per shift:
Duration of exposure per shift:

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07255, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07257 Appendix D: Health care provider respirator recommendation form—Nonmandatory. This is a nonmandatory appendix to chapter 296-62 WAC, Part E.

This form is for the use of PLHCPs who are providing recommendations to employers regarding employee clearance for respirator use. Completion of this form satisfies the requirement for PLHCP's recommendations as detailed in WAC 296-62-07155. The following information is purposely limited in order to maintain employee confidentiality.

Employee Name: Health Care Professional Name:
Employer Name:
Address: Address:
Phone: Phone:

Type of Respirator This Individual is Medically Cleared to Use

- Check all that apply.
[] Half-mask [] Full facepiece [] Helmet Hood [] Escape mask
[] Non-powered cartridge or canister [] Powered air-purifying cartridge respirator (PAPR)
[] Supplied-air or Air-line [] Disposable filtering facepiece (for example N-95)

Self contained breathing apparatus (SCBA):
[] Demand or [] Pressure demand
Other:

Respirator Clearance
Under the conditions described in the supplemental information provided by the employer, this individual: (please check one)

[] is medically cleared for use of the respirator(s) without limitations.
[] is medically cleared for use of the respirator(s) with the following limitations:
[] is not medically cleared for use of a respirator.

Workload Limitations
[] unrestricted [] heavy [] medium [] light

Follow-up Medical Evaluations
This individual will/will not (circle one) require additional follow-up medical evaluation(s). The recommended schedule for follow-up medical evaluations, if necessary, is as follows:

Employee Notification
I certify that the above named individual for whom this respirator clearance form is provided has received a copy of this recommendation.

Signature Date
(Physician or other Licensed Health Care Professional)

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07257, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07260 Appendix E: Additional information regarding respirator selection—Nonmandatory. This is a nonmandatory appendix to chapter 296-62 WAC, Part E, which includes WAC 296-62-07260 through 296-62-07295.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07260, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07261 How do you classify respiratory hazards? Respiratory hazards are classified into the following categories:

- Oxygen deficient;
• Physical properties (gas, vapor, biological aerosols, and particulate contaminants, which include dust, fog, fume, mist, smoke, and spray);
• Physiological effects on the body (for example, asphyxiant, carcinogenic, or toxic);
• Concentration of toxic material or radioactivity level;
• Established exposure limits; and
• Established immediately dangerous to life or health concentrations.

When selecting a respirator, you must determine which of the categories listed above apply to your workplace.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07261, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07263 What are oxygen deficient respiratory hazards? (1) The oxygen content of normal air at sea-level conditions is 20.9%.

(2) Minimum legal requirements: An oxygen deficient atmosphere is one that has 19.5% or less oxygen by volume for respirable air at sea-level conditions.

(3) They commonly occur in confined or unventilated cellars, wells, mines, ship holds, tanks, burning buildings, and enclosures containing inert atmospheres.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07263, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07265 What needs to be considered when combinations of contaminants occur in the workplace? Combinations of contaminants (gas, vapor and particulate) may occur simultaneously in the atmosphere. Contaminants may be entirely different substances (dusts and gases from blasting) or the particulate and vapor forms of the same substance. Synergistic effects (joint action of two or more agents that results in an effect that is greater than the sum of their individual effects) may occur. Such effects may require extraordinary protective measures.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07265, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07267 What are the two major types of respirators? Respirators are classified into the following categories:

(1) Air-purifying respirators. The following types of air-purifying respirators are available:

- Particulate-removing;
- Gas- and vapor-removing; and
- Combination particulate- and either gas- or vapor-removing.

(2) Atmosphere-supplying respirators. The following types of atmosphere-supplying respirators are available:

- Supplied-air or airline;
- Combination supplied-air and air-purifying;
- Combination supplied-air with auxiliary self-contained air supply; and
- Self-contained breathing apparatus (SCBA).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07267, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07269 What are air-purifying respirators (APRs)? (1) Air-purifying respirators remove particles, vapors, gases, or a combination of these contaminants by passing contaminated air through a filter, cartridge, or canister. The breathing action of the wearer operates the nonpowered type of respirator. The powered type contains a blower (usually carried by the wearer), that pulls contaminated air through air-purifying media and then blows the purified air to the respirator user. The nonpowered type is equipped with a tight-fitting facepiece or without one (for example, mouthpiece/nose clamp types). The powered type is equipped with a tight-fitting facepiece, helmet, hood, or suit.

(2) Air-purifying respirators are classified into the following categories:

- Particulate-removing respirators;
- Vapor- and gas-removing respirators; and

- Combinations of the above.

(3) Air-purifying respirators (APRs) are available as nonpowered, tight-fitting respirators, powered-air-purifying respirators (PAPRs) and mouthpiece respirators.

(4) A variety of tight-fitting APR styles are available ranging from half facepiece to full facepiece masks, including PAPRs. PAPRs are also available in loose-fitting styles, featuring a hood or helmet instead of a tight-fitting facepiece. Gas masks are only available in the full-facepiece style and some are classified as PAPRs.

(5) Mouthpiece respirators do not provide for a mask-to-face seal and are designed to be worn with a mouth bit and nose clamp.

(6) The most commonly used type of APR is a nonpowered, tight-fitting half-mask. The facepieces available for this type of respirator may be composed of silicone or other elastomeric materials if a cartridge type respirator is needed. Noncartridge types are called filtering facepiece respirators and are primarily composed of fibrous materials.

(7) Disposable options are available for either elastomeric or filtering facepiece type half-masks. Some disposables may last for only a brief period of use while others are designed for prolonged use (designed to have nonreplaceable parts), sometimes referred to as low maintenance respirators. Disposables are generally less expensive than nondisposable type half-masks.

(8) In addition, special cartridge-type half facepiece models may also be available with features designed for specific work operations. For example, low profile type half-masks are available to be worn under welding hoods.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07269, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07271 What are the general limitations for air-purifying respirators (APRs)? (1) Air-purifying respirators do not protect against oxygen-deficient atmospheres nor against skin irritation by, or absorption through the skin of, airborne contaminants.

(2) The maximum contaminant concentration against which an air-purifying respirator will protect is determined by the design and capacity of the cartridge, canister, or filter and the facepiece-to-face seal on the user. For gases and vapors, the maximum concentration for which the air-purifying element is designed is specified by the manufacturer or is listed on labels of cartridges and canisters.

(3) Nonpowered air-purifying respirators may not provide the assigned level of protection specified unless the facepiece is carefully fitted to the wearer's face to prevent leakage. The time period over which protection is provided is dependent on:

- Canister, cartridge, or filter capacity;
- Concentration of contaminant(s);
- Humidity levels in the ambient atmosphere; and
- The wearer's respiratory rate.

(4) The proper type of canister, cartridge, or filter must be selected for the particular atmosphere and conditions. Nonpowered air-purifying respirators may cause discomfort due to a noticeable resistance to inhalation. This problem is minimized with use of powered respirators. Respirator facepieces present special problems to individuals required to

wear prescription lenses (spectacle kits are available from some manufacturers). These devices do have the advantage of being small, light, and simple in operation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07271, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07273 What are particulate-removing respirators? Particulate-removing respirators are equipped with filter(s) to remove a single type of particulate matter (for example, dust) or a combination of two or more types of particulate matter (for example, dust and fume) from air. The filter may be a replaceable part or a permanent part of the respirator. It may also be a single-use or reusable type of filter.

(1) General limitations. Particulate-removing respirators provide protection against nonvolatile particles only. They do not protect against gases and vapors. They are not for use in atmospheres immediately dangerous to life or health (see WAC 296-62-07132).

(2) Full facepiece particulate respirators provide protection against eye irritation in addition to respiratory protection.

(3) Mouthpiece respirators must be used only for escape. Mouth breathing prevents detection of contaminant by odor. The nose clamp must be securely in place to prevent nasal breathing. A small, lightweight device that can be donned quickly.

(4) In environments with oil aerosols, you must not use "N" type particulate respirators.

(5) Combination particulate- and vapor- and gas-removing respirators are subject to the advantages and disadvantages of the component sections of the combination respirator as described above.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07273, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07275 What are vapor- and gas-removing respirators? Vapor- and gas-removing respirators are equipped with cartridge(s) or canister(s) to remove a single vapor or gas (for example, chlorine gas); a single class of vapors or gases (for example, organic vapors); or a combination of two or more classes or gases (for example, organic vapors, and acidic gases) from air.

(1) General limitations. Vapor and gas removing respirators do not provide protection against particulate contaminants. A rise in canister or cartridge temperature indicates that a gas or vapor is being removed from the inspired air. An uncomfortably high temperature indicates a high concentration of gas or vapor and requires immediate return to fresh air. Use must be avoided unless an ESLI or a change out schedule is available. They are not for use in atmospheres immediately dangerous to life or health.

(2) Full facepiece vapor- and gas-removing respirators provide protection against eye irritation in addition to respiratory protection.

(3) Mouthpiece respirators must be used only for escape. Mouth breathing prevents detection of contaminant by odor. The nose clamp must be securely in place to prevent nasal breathing. These are small lightweight devices that can be put on quickly.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07275, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07277 What are combination particulate- and vapor- and gas-removing respirators? Combination particulate- and vapor- and gas-removing respirators are equipped with cartridge(s) or canister(s) to remove particulate matter, vapors and gases from air. The filter may be a permanent part or a replaceable part of a cartridge or canister.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07277, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07279 What types of filters, canisters and cartridges are available for air-purifying respirators (APRs)? (1) Filters. Filters currently available for use against particulate contaminants are appropriate for solid particulates such as dusts or fumes, as well as being appropriate for nonvolatile, liquid particles such as sprays, mists and fogs.

(a) Cartridges or canister filters are available in addition to separate filter pads that can be added to some manufacturers' cartridges. They also may be formed into a filtering facepiece mask or as a wafer-like attachment. Regardless of how they are constructed, particulate filters are classified by physical limitations as "N," "R," and "P." Within each class, manufacturers may supply three different types of filters that reflect the efficiency rating (see below).

Class	Efficiency Rating		
N	95	99	100
R	95	99	100
P	95	99	100

(i) Filters that are classified as N-100, R-100, and P-100 are also referred to as HEPA filters. New particulate filters are more effective than older types of filters referred to as:

- Dust;
- Dust/mist; or
- Dust/fume/mist filters.

These older types of filters have highly variable efficiencies. They are no longer being manufactured and sold.

(ii) Any filter designated with "N" is appropriate for use in environments that do not contain oil. If you have oil aerosols, "R" or "P" designated filters are appropriate for use.

(b) Combination filters. Some vapor and gas cartridges and canisters have an added filter component for particulates. These are available as combination cartridges and will have a separate certification number listed on the respirator, packaging or in the operations manual for each type of contaminant.

(2) Canisters. Gas mask canisters are available for specific contaminants including ammonia, carbon monoxide, chlorine, phosphine and sulfur dioxide. Canisters are also available for general categories of chemical contaminants including acid gases, organic vapors, and pesticides. Canisters attachment options available are chin-, belt- or chest-mounted and a variety of canister sizes are available.

(3) Cartridges (nongas mask canisters). Cartridges are available for protection against specific contaminants and combinations of specific contaminants, including ammonia, chlorine, chlorine dioxide, formaldehyde, hydrogen chloride, hydrogen fluoride, hydrogen sulfide, mercury, methylamine, sulfur dioxide and vinyl chloride. Cartridges are also available for protection against general categories of chemical contaminants, including organic vapors, paints/lac-

quers/enamels and pesticides. Cartridge attachment options available include face-, chin-, belt- or helmet-mounted.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07279, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07281 How do atmosphere-supplying respirators work? (1) Atmosphere-supplying respirators supply a respirable atmosphere to the wearer.

(2) The two types of atmosphere-supplying respirators are:

- Self-contained breathing apparatus (SCBA); and
- Supplied-air respirators.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07281, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07283 What are the capabilities and limitations of atmosphere-supplying respirators? See WAC 296-62-07180 for the requirements on breathing gases used with atmosphere-supplying respirators.

(1) Capabilities. Atmosphere-supplying respirators provide protection against oxygen deficient and toxic atmospheres. The breathing atmosphere is independent of contaminated atmospheric conditions.

(2) General limitations. Except for some supplied-air suits, no protection is provided against skin irritation by materials such as ammonia and hydrogen chloride, or against absorption of materials such as hydrogen cyanide or organophosphate pesticides through the skin. Facepieces present special problems to individuals required to wear prescription lenses. Use of atmosphere-supplying respirators in atmospheres immediately dangerous to life or health is limited to specific devices under specified conditions (see WAC 296-62-07132).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07283, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07285 What is a supplied-air respirator? A supplied-air (or air-line) respirator provides respirable air through a small-diameter hose from a compressor or compressed-air cylinder(s). The hose is attached to the wearer by a belt or other suitable means and can be detached rapidly in an emergency. A flow-control valve or orifice is provided to govern the rate of air flow to the wearer. Exhaled air passes to the ambient atmosphere through a valve(s) or opening(s) in the enclosure (facepiece, helmet, hood, or suit). Up to 300 feet (91 meters) of hose length is permissible. Hose supplied by the manufacturer and recommended operating pressures and hose lengths must be used.

Supplied-air respirators are classified in the following ways:

(1) Continuous-flow respirators, which are equipped with a facepiece, hood, helmet, or suit. At least 115 liters (four cubic feet) of air per minute to tight-fitting facepieces and 170 liters (six cubic feet) of air per minute to loose fitting helmets, hoods and suits are required. Air is supplied to a suit through a system of internal tubes to the head, trunk and extremities through valves located in appropriate parts of the suit.

(2) Demand type (negative pressure) respirators, which are only equipped with a facepiece. The demand valve permits flow of air only during inhalation.

(3) Pressure-demand type (positive pressure) respirators, which are only equipped with a facepiece. A positive pressure is maintained in the facepiece.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07285, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07287 What are the general capabilities and limitations of supplied-air respirators? (1) Capabilities. The respirable air supply is not limited to the quantity the individual can carry, and the devices are lightweight and simple. The demand type produces a negative pressure in the facepiece on inhalation, whereas continuous-flow and pressure-demand types maintain a positive-pressure in the respirator-inlet covering and are less apt to permit inward leakage of contaminants. Supplied-air suits may protect against atmospheres that irritate the skin or that may be absorbed through the unbroken skin.

(2) Limitations. Employees are restricted in movement by the hose and must return to a respirable atmosphere by retracing their route of entry. The hose may be severed or pinched off. Supplied-air respirators provide no protection if the air supply fails. Some contaminants, such as tritium, may penetrate the material of an supplied-air suit and limit its effectiveness. Other contaminants, such as fluorine, may react chemically with the material of a supplied-air suit and damage it.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07287, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07289 What are combination supplied-air and air-purifying respirators? Combination supplied-air and air-purifying respirators provide the wearer with the option of using either of two different modes of operation:

(1) A supplied-air respirator with an auxiliary air-purifying attachment which provides protection in the event the air supply fails; or

(2) The advantages and disadvantages previously described for supplied-air and air-purifying respirators apply when these respirators are used in combination. The mode with the greater limitations (air-purifying mode) will generally determine the overall capabilities and limitations of the respirator, since the wearer may for some reason fail to change the mode of operation even though conditions require such a change.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07289, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07291 What are combination supplied-air respirators with auxiliary self-contained air supply? Some combination supplied-air respirators have an auxiliary self-contained air supply. To escape from a hazardous atmosphere in the event the primary air supply fails to operate, the wearer switches to the auxiliary self-contained air supply. Devices approved for both entry into and escape from dangerous atmospheres have a low-pressure warning alarm and contain at least a 5-minute self-contained air supply. The

auxiliary self-contained air supply on this type of device allows the wearer to escape from a dangerous atmosphere. This device with auxiliary self-contained air supply is approved for escape and may be used for entry when it contains at least a 15-minute auxiliary self-contained air supply and not more than 20 percent of the rated self-contained air supply is used during entry (see WAC 296-62-07132).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07291, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07293 What is a self-contained breathing apparatus respirator (SCBA)? SCBAs are respirators designed so that the supply of air, oxygen, or oxygen-generated material is carried by the wearer. They are normally equipped with a full facepiece, but may be equipped with a half-mask facepiece, helmet, hood or mouthpiece and nose clamp.

SCBAs are classified in the following ways:

(1) Closed-circuit SCBA (oxygen only, negative pressure or positive pressure). There are two types of closed-circuit SCBAs. They are:

(a) Compressed liquid oxygen respirators, which are equipped with a facepiece or mouthpiece and nose clamp. High-pressure oxygen from a gas cylinder passes through a high-pressure reducing valve and, in some designs, through a low-pressure admission valve to a breathing bag or container. Liquid oxygen is converted to low-pressure gaseous oxygen and delivered to the breathing bag. The wearer inhales from the bag through a corrugated tube connected to a mouthpiece or facepiece and a one-way check valve. Exhaled air passes through another check valve and tube into a container of carbon-dioxide removing chemical and reenters the breathing bag. Make-up oxygen enters the bag continuously or as the bag deflates sufficiently to actuate an admission valve. A pressure-relief system is provided, and a manual bypass and saliva trap may be provided depending upon the design.

(b) Oxygen-generating respirators, which are equipped with a facepiece or mouthpiece and nose clamp. Water vapor in the exhaled breath reacts with the chemical in the canister to release oxygen to the breathing bag. The wearer inhales from the bag through a corrugated tube and one-way check valve at the facepiece. Exhaled air passes through a second check valve/breathing tube assembly into the canister. The oxygen-release rate is governed by the volume of exhaled air. Carbon dioxide in the exhaled breath is removed by the canister fill.

(2) Open-circuit (SCBA) (compressed air, compressed oxygen, liquid air, liquid oxygen). A bypass system is provided in case of regulator failure except on escape-type units. There are two types of open-circuit SCBAs. They are:

(a) Demand-type respirators, which are equipped with a facepiece or mouthpiece and nose clamp. The demand valve permits oxygen or air flow only during inhalation. Exhaled breath passes to ambient atmosphere through a valve(s) in the facepiece.

(b) Pressure-demand type respirators, which are equipped with a facepiece only. Positive pressure is maintained in the facepiece. The apparatus may have provision for the wearer to select the demand or pressure-demand mode

of operation, in which case only the demand mode must be used when putting on or removing the apparatus.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07293, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07295 What are the limitations for self-contained breathing apparatus respirators (SCBA)? (1) The period over which the SCBAs will provide protection is limited by the amount of air or oxygen in the apparatus, the ambient atmospheric pressure (service life of open-circuit devices is cut in half by a doubling of the atmospheric pressure), and the type of work being performed. Some SCBA devices have a short service life (less than 15 minutes) and are suitable only for escape (self-rescue) from an irreparable atmosphere. Chief limitations of SCBA devices are their weight, bulk, limited service life, and the training requirements for their maintenance and safe use.

(2) What are the limitations for closed-circuit SCBAs?

The closed-circuit operation conserves oxygen and permits longer service life at reduced weight. The negative-pressure type produces a negative pressure in the respiratory-inlet covering during inhalation, and this may permit inward leakage of contaminants; the positive-pressure type always maintains a positive pressure in the respiratory-inlet covering and is less apt to permit inward leakage of contaminants.

(3) What are the limitations for open circuit SCBAs?

The demand type produces a negative pressure in the respiratory-inlet covering during inhalation, whereas the pressure-demand type maintains a positive pressure in the respiratory-inlet covering during inhalation and is less apt to permit inward leakage of contaminants.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07295, filed 5/4/99, effective 9/1/99.]

WAC 296-62-07306 Requirements for areas containing carcinogens listed in WAC 296-62-07302. (1) A regulated area shall be established by an employer where listed carcinogens are manufactured, processed, used, repackaged, released, handled or stored.

(2) All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved:

(a) Isolated systems. Employees working with carcinogens within an isolated system such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(b) Closed system operation. Within regulated areas where carcinogens are stored in sealed containers, or contained in a closed system including piping systems with any sample ports or openings closed while carcinogens are contained within:

(i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(c) Open vessel system operations. Open vessel system operations as defined in WAC 296-62-07304(12) are prohibited.

(d) Transfer from a closed system. Charging or discharging point operations, or otherwise opening a closed system. In operations involving "laboratory-type hoods," or in locations where a carcinogen is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this section shall apply.

(i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in handling operations involving the following carcinogens must be provided with and required to wear and use a full-face, supplied-air respirator, of the continuous flow or pressure-demand type as required in chapter 296-62 WAC, Part E:

- Methyl Chloromethyl Ether;
- bis-Chloromethyl Ether;
- Ethylenimine;
- beta-Propiolactone;
- 4-Amino Diphenyl.

(v) Employees engaged in handling operations involving:

- 4-nitrobiphenyl;
- alpha-naphthylamine;
- 4-4'methylene bis(2-chloroaniline);
- 3-3'dichlorobenzidine (and its salts);
- beta-naphthylamine;
- benzidine;
- 2-acetylamino fluorene;
- 4-dimethylaminobenzene;
- n-nitrosodimethylamine

must be provided with, and required to wear and use, a half-face, filter-type respirator certified for solid or liquid particulates with minimum efficiency rating of 95% as required in chapter 296-62 WAC, Part E. A respirator affording higher levels of protection than this respirator may be substituted.

(vi) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under WAC 296-62-07310 (2), (3) and (4).

(vii) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(viii) Employees shall be required to shower after the last exit of the day.

(ix) Drinking fountains are prohibited in the regulated area.

(e) Maintenance and decontamination activities. In clean up of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with carcinogens could result, each authorized employee entering the area shall:

(i) Be provided with and required to wear, clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with chapter 296-24 WAC, the general safety and health standards, and respiratory protective equipment required by this chapter 296-62 WAC;

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(f) Laboratory activities. The requirements of this subdivision shall apply to research and quality control activities involving the use of carcinogens listed in WAC 296-62-07302.

(i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which carcinogens are handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of listed carcinogens shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be:

(A) Provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(B) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under WAC 296-62-07310 (2), (3) and (4).

(C) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(D) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be:

(A) Provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(B) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under WAC 296-62-07310 (2), (3) and (4).

(C) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where carcinogens are handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of the carcinogens shall be maintained.

(xii) Ventilated apparatus such as laboratory-type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07306, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW, 96-09-030, § 296-62-07306, filed 4/10/96, effective 6/1/96. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-16-009 (Order 86-28), § 296-62-07306, filed 7/25/86; 85-10-004 (Order 85-09), § 296-62-07306, filed 4/19/85. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-16-015 (Order 81-20), § 296-62-07306, filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW, 80-17-014 (Order 80-20), § 296-62-07306, filed 11/13/80.]

WAC 296-62-07308 General regulated area requirements. (1) Respirator program. The employer must implement a respiratory protection program as required in chapter 296-62 WAC, Part E (except WAC 296-62-07130 (1) and (5) and 296-62-07131).

(2) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of (a), (b), (c), (d) and (e) of this subsection shall be implemented.

(a) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(b) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(c) Special medical surveillance by a physician shall be instituted within twenty-four hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with WAC 296-62-07312(2).

(d) Where an employee has a known contact with a listed carcinogen, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(e) An incident report on the emergency shall be reported as provided in WAC 296-62-07312(2).

(3) Hygiene facilities and practices.

(a) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(b) Where employees are required by this section to wash, washing facilities shall be provided in accordance with WAC 296-24-12009, of the general safety and health standards.

(c) Where employees are required by this section to shower, shower facilities shall be provided.

(i) One shower shall be provided for each ten employees of each sex, or numerical fraction thereof, who are required to shower during the same shift.

(ii) Body soap or other appropriate cleansing agents convenient to the showers shall be provided as specified in WAC 296-24-12009, of the general safety and health standards.

(iii) Showers shall be provided with hot and cold water feeding a common discharge line.

(iv) Employees who use showers shall be provided with individual clean towels.

(d) Where employees wear protective clothing and equipment, clean change rooms shall be provided and shall be equipped with storage facilities for street clothes and separate storage facilities for the protective clothing for the number of such employees required to change clothes.

(e) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) Contamination control.

(a) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(b) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(c) Decontamination procedures shall be established and implemented to remove carcinogens from the surfaces of materials, equipment and the decontamination facility.

(d) Dry sweeping and dry mopping are prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07308, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050, 83-24-013 (Order 83-34), § 296-62-07308, filed 11/30/83. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW, 80-17-014 (Order 80-20), § 296-62-07308, filed 11/13/80.]

WAC 296-62-07329 Vinyl chloride. (1) Scope and application.

(a) This section includes requirements for the control of employee exposure to vinyl chloride (chloroethene), Chemical Abstracts Service Registry No. 75014.

(b) This section applies to the manufacture, reaction, packaging, repackaging, storage, handling or use of vinyl chloride or polyvinyl chloride, but does not apply to the handling or use of fabricated products made of polyvinyl chloride.

(c) This section applies to the transportation of vinyl chloride or polyvinyl chloride except to the extent that the department of transportation may regulate the hazards covered by this section.

(2) Definitions.

(a) "Action level" means a concentration of vinyl chloride of 0.5 ppm averaged over an 8-hour work day.

(b) "Authorized person" means any person specifically authorized by the employer whose duties require him/her to enter a regulated area or any person entering such an area as a designated representative of employees for the purpose of exercising an opportunity to observe monitoring and measuring procedures.

(c) "Director" means the director of department of labor and industries or his/her designated representative.

(d) "Emergency" means any occurrence such as, but not limited to, equipment failure, or operation of a relief device which is likely to, or does, result in massive release of vinyl chloride.

(e) "Fabricated product" means a product made wholly or partly from polyvinyl chloride, and which does not require further processing at temperatures, and for times, sufficient to cause mass melting of the polyvinyl chloride resulting in the release of vinyl chloride.

(f) "Hazardous operation" means any operation, procedure, or activity where a release of either vinyl chloride liquid or gas might be expected as a consequence of the operation or because of an accident in the operation, which would result in an employee exposure in excess of the permissible exposure limit.

(g) "Polyvinyl chloride" means polyvinyl chloride homopolymer or copolymer before such is converted to a fabricated product.

(h) "Vinyl chloride" means vinyl chloride monomer.

(3) Permissible exposure limit.

(a) No employee may be exposed to vinyl chloride at concentrations greater than 1 ppm averaged over any 8-hour period, and

(b) No employee may be exposed to vinyl chloride at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes.

(c) No employee may be exposed to vinyl chloride by direct contact with liquid vinyl chloride.

(4) Monitoring.

(a) A program of initial monitoring and measurement shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

(b) Where a determination conducted under subdivision (a) of this subsection shows any employee exposures without regard to the use of respirators, in excess of the action level, a program for determining exposures for each such employee shall be established. Such a program:

(i) Shall be repeated at least monthly where any employee is exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

(ii) Shall be repeated not less than quarterly where any employee is exposed, without regard to the use of respirators, in excess of the action level.

(iii) May be discontinued for any employee only when at least two consecutive monitoring determinations, made not less than 5 working days apart, show exposures for that employee at or below the action level.

(c) Whenever there has been a production, process or control change which may result in an increase in the release of vinyl chloride, or the employer has any other reason to suspect that any employee may be exposed in excess of the action level, a determination of employee exposure under subdivision (a) of this subsection shall be performed.

(d) The method of monitoring and measurement shall have an accuracy (with a confidence level of 95 percent) of not less than plus or minus 50 percent from 0.25 through 0.5 ppm, plus or minus 35 percent from over 0.5 ppm through 1.0 ppm, plus or minus 25 percent over 1.0 ppm, (methods meeting these accuracy requirements are available from the director).

(e) Employees or their designated representatives shall be afforded reasonable opportunity to observe the monitoring and measuring required by this subsection.

(5) Regulated area.

(a) A regulated area shall be established where:

(i) Vinyl chloride or polyvinyl chloride is manufactured, reacted, repackaged, stored, handled or used; and

(ii) Vinyl chloride concentrations are in excess of the permissible exposure limit.

(b) Access to regulated areas shall be limited to authorized persons.

(6) Methods of compliance. Employee exposures to vinyl chloride shall be controlled to at or below the permissible exposure limit provided in subsection (3) of this section by engineering, work practice, and personal protective controls as follows:

(a) Feasible engineering and work practice controls shall immediately be used to reduce exposures to at or below the permissible exposure limit.

(b) Wherever feasible engineering and work practice controls which can be instituted immediately are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with subsection (7) of this section. A program shall be established and implemented to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of engineering and work practice controls, as soon as feasible.

(c) Written plans for such a program shall be developed and furnished upon request for examination and copying to the director. Such plans shall be updated at least every six months.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this section.

(b) Respirator program. The employer must establish, implement, and maintain a respiratory protection program as required in chapter 296-62 WAC, Part E (except WAC 296-62-07130(1), 296-62-07131 (4)(b)(i) and (ii), and 296-62-07150 through 296-62-17156).

(c) Respirator selection. Respirators must be selected from the following table.

Atmospheric concentration of Vinyl Chloride	Apparatus
(i) Not over 10 ppm	Any chemical cartridge respirator with a vinyl chloride cartridge which provides a service life of at least 1 hour for concentrations of vinyl chloride up to 10 ppm.
(ii) Not over 25 ppm	(A) A powered air-purifying respirator with hood, helmet, full or half facepiece, and a canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm, or (B) Gas mask, front or back-mounted canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm.
(iii) Not over 100 ppm	Supplied air respirator demand type, with full facepiece.
(iv) Not over 250 ppm	Type C, supplied air respirator, continuous flow type, with full or half facepiece, helmet or hood.
(v) Not over 3,600 ppm	Combination Type C supplied air respirator, pressure demand type, with full or half facepiece and auxiliary self-contained air supply.
(vi) Unknown, or above 3,600 ppm	Open-circuit, self-contained breathing apparatus, pressure demand type, with full facepiece.

(d) Where air-purifying respirators are used:

(i) Air-purifying canisters or cartridges must be replaced prior to the expiration of their service life or the end of the shift in which they are first used, whichever occurs first, and

(ii) A continuous monitoring and alarm system must be provided when concentrations of vinyl chloride could reasonably exceed the allowable concentrations for the devices in use. Such system shall be used to alert employees when vinyl chloride concentrations exceed the allowable concentrations for the devices in use, and

(iii) Respirators specified for higher concentrations may be used for lower concentration.

(8) Hazardous operations.

(a) Employees engaged in hazardous operations, including entry of vessels to clean polyvinyl chloride residue from vessel walls, shall be provided and required to wear and use:

(i) Respiratory protection in accordance with subsections (3) and (7) of this section; and

(ii) Protective garments to prevent skin contact with liquid vinyl chloride or with polyvinyl chloride residue from vessel walls. The protective garments shall be selected for the operation and its possible exposure conditions.

(b) Protective garments shall be provided clean and dry for each use.

(c) Emergency situations. A written operational plan for emergency situations shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the plan shall be implemented in the event of an emergency. The plan shall specifically provide that:

(i) Employees engaged in hazardous operations or correcting situations of existing hazardous releases shall be equipped as required in subdivisions (a) and (b) of this subsection;

(ii) Other employees not so equipped shall evacuate the area and not return until conditions are controlled by the methods required in subsection (6) of this section and the emergency is abated.

(9) Training. Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

(a) The program shall include:

(i) The nature of the health hazard from chronic exposure to vinyl chloride including specifically the carcinogenic hazard;

(ii) The specific nature of operations which could result in exposure to vinyl chloride in excess of the permissible limit and necessary protective steps;

(iii) The purpose for, proper use, and limitations of respiratory protective devices;

(iv) The fire hazard and acute toxicity of vinyl chloride, and the necessary protective steps;

(v) The purpose for and a description of the monitoring program;

(vi) The purpose for and a description of, the medical surveillance program;

(vii) Emergency procedures:

(A) Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride; and

(B) A review of this standard at the employee's first training and indoctrination program, and annually thereafter.

(b) All materials relating to the program shall be provided upon request to the director.

(10) Medical surveillance. A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in

accordance with this subsection. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician and shall be provided without cost to the employee.

(a) At the time of initial assignment, or upon institution of medical surveillance;

(i) A general physical examination shall be performed with specific attention to detecting enlargement of liver, spleen or kidneys, or dysfunction in these organs, and for abnormalities in skin, connective tissues and the pulmonary system (see Appendix A).

(ii) A medical history shall be taken, including the following topics:

(A) Alcohol intake,

(B) Past history of hepatitis,

(C) Work history and past exposure to potential hepatotoxic agents, including drugs and chemicals,

(D) Past history of blood transfusions, and

(E) Past history of hospitalizations.

(iii) A serum specimen shall be obtained and determinations made of:

(A) Total bilirubin,

(B) Alkaline phosphatase,

(C) Serum glutamic oxalacetic transaminase (SGOT),

(D) Serum glutamic pyruvic transaminase (SGPT), and

(E) Gamma glutamyl transpeptidase.

(b) Examinations provided in accordance with this subdivision shall be performed at least:

(i) Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer; and

(ii) Annually for all other employees.

(c) Each employee exposed to an emergency shall be afforded appropriate medical surveillance.

(d) A statement of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A copy of the physician's statement shall be provided each employee.

(e) If any employee's health would be materially impaired by continued exposure, such employee shall be withdrawn from possible contact with vinyl chloride.

(f) Laboratory analyses for all biological specimens included in medical examinations shall be performed in laboratories licensed under 42 CFR Part 74.

(g) If the examining physician determines that alternative medical examinations to those required by subdivision (a) of this subsection will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of subdivision (a) of this subsection, if the employer obtains a statement from the examining physician setting forth the alternative examinations and the rationale for substitution. This statement shall be available upon request for examination and copying to authorized representatives of the director.

(11) Signs and labels.

(a) Entrances to regulated areas shall be posted with legible signs bearing the legend:

CANCER-SUSPECT AGENT AREA AUTHORIZED PERSONNEL ONLY

(b) Areas containing hazardous operations or where an emergency currently exists shall be posted with legible signs bearing the legend:

CANCER-SUSPECT AGENT IN THIS AREA PROTECTIVE EQUIPMENT REQUIRED AUTHORIZED PERSONNEL ONLY

(c) Containers of polyvinyl chloride resin waste from reactors or other waste contaminated with vinyl chloride shall be legibly labeled:

CONTAMINATED WITH VINYL CHLORIDE CANCER-SUSPECT AGENT

(d) Containers of polyvinyl chloride shall be legibly labeled:

POLYVINYL CHLORIDE (OR TRADE NAME) CONTAINS VINYL CHLORIDE VINYL CHLORIDE IS A CANCER-SUSPECT AGENT

(e) Containers of vinyl chloride shall be legibly labeled either:

VINYL CHLORIDE EXTREMELY FLAMMABLE GAS UNDER PRESSURE CANCER-SUSPECT AGENT

(or)

(f) In accordance with 49 CFR Part 173, Subpart H, with the additional legends:

CANCER-SUSPECT AGENT

Applied near the label or placard.

(g) No statement shall appear on or near any required sign, label or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(12) Records.

(a) All records maintained in accordance with this section shall include the name and social security number of each employee where relevant.

(b) Records of required monitoring and measuring and medical records shall be provided upon request to employees, designated representatives, and the director in accordance with WAC 296-62-05201 through 296-62-05209; and 296-62-05213 through 296-62-05217. These records shall be provided upon request to the director. Authorized personnel rosters shall also be provided upon request to the director.

(i) Monitoring and measuring records shall:

(A) State the date of such monitoring and measuring and the concentrations determined and identify the instruments and methods used;

(B) Include any additional information necessary to determine individual employee exposures where such exposures are determined by means other than individual monitoring of employees; and

(C) Be maintained for not less than 30 years.

(ii) Medical records shall be maintained for the duration of the employment of each employee plus 20 years, or 30 years, whichever is longer.

(c) In the event that the employer ceases to do business and there is no successor to receive and retain his/her records for the prescribed period, these records shall be transmitted by registered mail to the director, and each employee individually notified in writing of this transfer. The employer shall also comply with any additional requirements set forth in WAC 296-62-05215.

(d) Employees or their designated representatives shall be provided access to examine and copy records of required monitoring and measuring.

(e) Former employees shall be provided access to examine and copy required monitoring and measuring records reflecting their own exposures.

(f) Upon written request of any employee, a copy of the medical record of that employee shall be furnished to any physician designated by the employee.

(13) Reports.

(a) Not later than 1 month after the establishment of a regulated area, the following information shall be reported to the director. Any changes to such information shall be reported within 15 days.

(i) The address and location of each establishment which has one or more regulated areas; and

(ii) The number of employees in each regulated area during normal operations, including maintenance.

(b) Emergencies and the facts obtainable at that time, shall be reported within 24 hours to the director. Upon request of the director, the employer shall submit additional information in writing relevant to the nature and extent of employee exposures and measures taken to prevent future emergencies of similar nature.

(c) Within 10 working days following any monitoring and measuring which discloses that any employee has been exposed, without regard to the use of respirators, in excess of the permissible exposure limit, each such employee shall be notified in writing of the results of the exposure measurement and the steps being taken to reduce the exposure to within the permissible exposure limit.

(14) Appendix A supplementary medical information.

When required tests under subsection (10)(a) of this section show abnormalities, the tests should be repeated as soon as practicable, preferably within 3 to 4 weeks. If tests remain abnormal, consideration should be given to withdrawal of the employee from contact with vinyl chloride, while a more comprehensive examination is made.

Additional tests which may be useful:

(A) For kidney dysfunction: Urine examination for albumin, red blood cells, and exfoliative abnormal cells.

(B) Pulmonary system: Forced vital capacity, forced expiratory volume at 1 second, and chest roentgenogram (posterior-anterior, 14 x 17 inches).

(C) Additional serum tests: Lactic acid dehydrogenase, lactic acid dehydrogenase isoenzyme, protein determination, and protein electrophoresis.

(D) For a more comprehensive examination on repeated abnormal serum tests: Hepatitis B antigen, and liver scanning.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07329, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07329, filed

7/20/94, effective 9/20/94; 91-03-044 (Order 90-18), § 296-62-07329, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-16-009 (Order 86-28), § 296-62-07329, filed 7/25/86; 82-13-045 (Order 82-22), § 296-62-07329, filed 6/11/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-18-029 (Order 81-21), § 296-62-07329, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07329, filed 7/27/81; Order 75-41, § 296-62-07329, filed 12/19/75.]

WAC 296-62-07336 Acrylonitrile. (1) Scope and application.

(a) This section applies to all occupational exposure to acrylonitrile (AN), Chemical Abstracts Service Registry No. 000107131, except as provided in (b) and (c) of this subsection.

(b) This section does not apply to exposures which result solely from the processing, use, and handling of the following materials:

(i) ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers;

(ii) Materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable of releasing AN in airborne concentrations in excess of 1 ppm as an eight-hour time-weighted average, under the expected conditions of processing, use, and handling which will cause the greatest possible release; and

(iii) Solid materials made from and/or containing AN which will not be heated above 170°F during handling, use, or processing.

(c) An employer relying upon exemption under (1)(b)(ii) shall maintain records of the objective data supporting that exemption, and of the basis of the employer's reliance on the data as provided in subsection (17) of this section.

(2) Definitions, as applicable to this section:

(a) "Acrylonitrile" or "AN" - acrylonitrile monomer, chemical formula $\text{CH}_2=\text{CHCN}$.

(b) "Action level" - a concentration of AN of 1 ppm as an eight-hour time-weighted average.

(c) "Authorized person" - any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the opportunity to observe monitoring procedures under subsection (18) of this section.

(d) "Decontamination" means treatment of materials and surfaces by water washdown, ventilation, or other means, to assure that the materials will not expose employees to airborne concentrations of AN above 1 ppm as an eight-hour time-weighted average.

(e) "Director" - the director of labor and industries, or his authorized representative.

(f) "Emergency" - any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which is likely to, or does, result in unexpected exposure to AN in excess of the ceiling limit.

(g) "Liquid AN" means AN monomer in liquid form, and liquid or semiliquid polymer intermediates, including slurries, suspensions, emulsions, and solutions, produced during the polymerization of AN.

(h) "Polyacrylonitrile" or "PAN" - polyacrylonitrile homopolymers or copolymers, except for materials as exempted under subsection (1)(b) of this section.

(3) Permissible exposure limits.

(a) Inhalation.

(i) Time-weighted average limit (TWA). The employer shall assure that no employee is exposed to an airborne concentration of acrylonitrile in excess of two parts acrylonitrile per million parts of air (2 ppm), as an eight-hour time-weighted average.

(ii) Ceiling limit. The employer shall assure that no employee is exposed to an airborne concentration of acrylonitrile in excess of 10 ppm as averaged over any fifteen-minute period during the working day.

(b) Dermal and eye exposure. The employer shall assure that no employee is exposed to skin contact or eye contact with liquid AN or PAN.

(4) Notification of use and emergencies.

(a) Use. Within ten days of the effective date of this standard, or within fifteen days following the introduction of AN into the workplace, every employer shall report, unless he has done so pursuant to the emergency temporary standard, the following information to the director for each such workplace:

(i) The address and location of each workplace in which AN is present;

(ii) A brief description of each process of operation which may result in employee exposure to AN;

(iii) The number of employees engaged in each process or operation who may be exposed to AN and an estimate of the frequency and degree of exposure that occurs; and

(iv) A brief description of the employer's safety and health program as it relates to limitation of employee exposure to AN. Whenever there has been a significant change in the information required by this subsection, the employer shall promptly amend such information previously provided to the director.

(b) Emergencies and remedial action. Emergencies, and the facts obtainable at that time, shall be reported within 24 hours of the initial occurrence to the director. Upon request of the director, the employer shall submit additional information in writing relevant to the nature and extent of employee exposures and measures taken to prevent future emergencies of a similar nature.

(5) Exposure monitoring.

(a) General.

(i) Determinations of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to AN over an eight-hour period.

(ii) For the purposes of this section, employee exposure is that which would occur if the employee were not using a respirator.

(b) Initial monitoring. Each employer who has a place of employment in which AN is present shall monitor each such workplace and work operation to accurately determine the airborne concentrations of AN to which employees may be exposed. Such monitoring may be done on a representative basis, provided that the employer can demonstrate that the determinations are representative of employee exposures.

(c) Frequency.

(i) If the monitoring required by this section reveals employee exposure to be below the action level, the employer may discontinue monitoring for that employee. The employer shall continue these quarterly measurements until at least two consecutive measurements taken at least seven days apart, are below the action level, and thereafter the employer may discontinue monitoring for that employee.

(ii) If the monitoring required by this section reveals employee exposure to be at or above the action level but below the permissible exposure limits, the employer shall repeat such monitoring for each such employee at least quarterly.

(iii) If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer shall repeat these determinations for each such employee at least monthly. The employer shall continue these monthly measurements until at least two consecutive measurements, taken at least seven days apart, are below the permissible exposure limits, and thereafter the employer shall monitor at least quarterly.

(d) Additional monitoring. Whenever there has been a production, process, control or personnel change which may result in new or additional exposure to AN, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to AN, additional monitoring which complies with this subsection shall be conducted.

(e) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(ii) Whenever the results indicate that the representative employee exposure exceeds the permissible exposure limits, the employer shall include in the written notice a statement that the permissible exposure limits were exceeded and a description of the corrective action being taken to reduce exposure to or below the permissible exposure limits.

(f) Accuracy of measurement. The method of measurement of employee exposures shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for concentrations of AN at or above the permissible exposure limits, and plus or minus 35 percent for concentrations of AN between the action level and the permissible exposure limits.

(g) Weekly survey of operations involving liquid AN. In addition to monitoring of employee exposures to AN as otherwise required by this subsection, the employer shall survey areas of operations involving liquid AN at least weekly to detect points where AN liquid or vapor are being released into the workplace. The survey shall employ an infra-red gas analyzer calibrated for AN, a multipoint gas chromatographic monitor, or comparable system for detection of AN. A listing of levels detected and areas of AN release, as determined from the survey, shall be posted prominently in the workplace, and shall remain posted until the next survey is completed.

(6) Regulated areas.

(a) The employer shall establish regulated areas where AN concentrations are in excess of the permissible exposure limits.

(b) Regulated areas shall be demarcated and segregated from the rest of the workplace, in any manner that minimizes the number of persons who will be exposed to AN.

(c) Access to regulated areas shall be limited to authorized persons or to persons otherwise authorized by the act or regulations issued pursuant thereto.

(d) The employer shall assure that in the regulated area, food or beverages are not present or consumed, smoking products are not present or used, and cosmetics are not applied, (except that these activities may be conducted in the lunchrooms, change rooms and showers required under subsections (13)(a)-(13)(c) of this section.

(7) Methods of compliance.

(a) Engineering and work practice controls.

(i) The employer shall institute engineering or work practice controls to reduce and maintain employee exposures to AN, to or below the permissible exposure limits, except to the extent that the employer establishes that such controls are not feasible.

(ii) Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limits, the employer shall nonetheless use them to reduce exposures to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of subsection (8) of this section.

(b) Compliance program.

(i) The employer shall establish and implement a written program to reduce employee exposures to or below the permissible exposure limits solely by means of engineering and work practice controls, as required by subsection (7)(a) of this section.

(ii) Written plans for these compliance programs shall include at least the following:

(A) A description of each operation or process resulting in employee exposure to AN above the permissible exposure limits;

(B) Engineering plans and other studies used to determine the controls for each process;

(C) A report of the technology considered in meeting the permissible exposure limits;

(D) A detailed schedule for the implementation of engineering or work practice controls; and

(E) Other relevant information.

(iii) The employer shall complete the steps set forth in the compliance program by the dates in the schedule.

(iv) Written plans for such a program shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, or any affected employee or representative.

(v) The plans required by this subsection shall be revised and updated at least every six months to reflect the current status of the program.

(8) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Work operations, such as maintenance and repair activities or reactor cleaning, for which the employer establishes that engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limits;

(iv) In emergencies.

(b) Respirator program.

The employer must implement a respiratory protection program in accordance with chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(c) Respirator selection. The employer must select the appropriate respirator from Table I of this subsection.

TABLE I
RESPIRATORY PROTECTION FOR ACRYLONITRILE (AN)

Concentration of AN or Condition of Use	Respirator Type
(a) Less than or equal to 25 x permissible exposure limits.	(i) Any Type C supplied air respirator.
(b) Less than or equal to 100 x permissible exposure limits.	(i) Any supplied air respirator with full facepiece; or
	(ii) Any self-contained breathing apparatus with full facepiece.
(c) Less than or equal to 250 x permissible exposure limits	(i) Supplied air respirator in positive pressure mode with full facepiece, helmet, hood, or suit.
	(ii) Supplied air respirator with full facepiece and an auxiliary self-contained air supply, operated in pressure demand mode; or
(d) Greater than 250 x permissible exposure limits.	(i) Open circuit self-contained breathing apparatus with full facepiece in positive pressure mode.
	(ii) Any self-contained breathing apparatus with full facepiece in positive pressure mode.
(e) Emergency entry into unknown concentration or firefighting	(i) Any self-contained breathing apparatus with full facepiece in positive pressure mode.
	(ii) Any organic vapor gas mask; or
(f) Escape.	(i) Any self-contained breathing.
	(ii) Any self-contained breathing.

(9) Emergency situations.

(a) Written plans.

(i) A written plan for emergency situations shall be developed for each workplace where AN is present. Appropriate portions of the plan shall be implemented in the event of an emergency.

(ii) The plan shall specifically provide that employees engaged in correcting emergency conditions shall be equipped as required in subsection (8) of this section until the emergency is abated.

(b) Alerting employees.

(i) Where there is the possibility of employee exposure to AN in excess of the ceiling limit due to the occurrence of

an emergency, a general alarm shall be installed and maintained to promptly alert employees of such occurrences.

(ii) Employees not engaged in correcting the emergency shall be evacuated from the area and shall not be permitted to return until the emergency is abated.

(10) Protective clothing and equipment.

(a) Provision and use. Where eye or skin contact with liquid AN or PAN may occur, the employer shall provide at no cost to the employee, and assure that employees wear, appropriate protective clothing or other equipment in accordance with WAC 296-24-07501 and 296-24-07801 to protect any area of the body which may come in contact with liquid AN or PAN.

(b) Cleaning and replacement.

(i) The employer shall clean, launder, maintain, or replace protective clothing and equipment required by this subsection, as needed to maintain their effectiveness. In addition, the employer shall provide clean protective clothing and equipment at least weekly to each affected employee.

(ii) The employer shall assure that impermeable protective clothing which contacts or is likely to have contacted liquid AN shall be decontaminated before being removed by the employee.

(iii) The employer shall assure that AN- or PAN-contaminated protective clothing and equipment is placed and stored in closable containers which prevent dispersion of the AN or PAN outside the container.

(iv) The employer shall assure that an employee whose nonimpermeable clothing becomes wetted with liquid AN shall immediately remove that clothing and proceed to shower. The clothing shall be decontaminated before it is removed from the regulated area.

(v) The employer shall assure that no employee removes AN- or PAN-contaminated protective equipment or clothing from the change room, except for those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(vi) The employer shall inform any person who launders or cleans AN- or PAN-contaminated protective clothing or equipment of the potentially harmful effects of exposure to AN.

(vii) The employer shall assure that containers of contaminated protective clothing and equipment which are to be removed from the workplace for any reason are labeled in accordance with subsection (16)(c)(ii) of this section, and that such labels remain affixed when such containers leave the employer's workplace.

(11) Housekeeping.

(a) All surfaces shall be maintained free of accumulations of liquid AN and of PAN.

(b) For operations involving liquid AN, the employer shall institute a program for detecting leaks and spills of liquid AN, including regular visual inspections.

(c) Where spills of liquid AN are detected, the employer shall assure that surfaces contacted by the liquid AN are decontaminated. Employees not engaged in decontamination activities shall leave the area of the spill, and shall not be permitted in the area until decontamination is completed.

(d) Liquids. Where AN is present in a liquid form, or as a resultant vapor, all containers or vessels containing AN

shall be enclosed to the maximum extent feasible and tightly covered when not in use, with adequate provision made to avoid any resulting potential explosion hazard.

(e) Surfaces.

(i) Dry sweeping and the use of compressed air for the cleaning of floors and other surfaces where AN and PAN are found is prohibited.

(ii) Where vacuuming methods are selected, either portable units or a permanent system may be used.

(A) If a portable unit is selected, the exhaust shall be attached to the general workplace exhaust ventilation system or collected within the vacuum unit, equipped with high efficiency filters or other appropriate means of contaminant removal, so that AN is not reintroduced into the workplace air; and

(B) Portable vacuum units used to collect AN may not be used for other cleaning purposes and shall be labeled as prescribed by subsection (16)(c)(ii) of this section.

(iii) Cleaning of floors and other contaminated surfaces may not be performed by washing down with a hose, unless a fine spray has first been laid down.

(12) Waste disposal. AN and PAN waste, scrap, debris, bags, containers or equipment, shall be disposed of in sealed bags or other closed containers which prevent dispersion of AN outside the container, and labeled as prescribed in subsection (16)(c)(ii) of this section.

(13) Hygiene facilities and practices. Where employees are exposed to airborne concentrations of AN above the permissible exposure limits, or where employees are required to wear protective clothing or equipment pursuant to subsection (11) of this section, or where otherwise found to be appropriate, the facilities required by WAC 296-24-12009 shall be provided by the employer for the use of those employees, and the employer shall assure that the employees use the facilities provided. In addition, the following facilities or requirements are mandated.

(a) Change rooms. The employer shall provide clean change rooms in accordance with WAC 296-24-12011.

(b) Showers.

(i) The employer shall provide shower facilities in accordance with WAC 296-24-12009(3).

(ii) In addition, the employer shall also assure that employees exposed to liquid AN and PAN shower at the end of the work shift.

(iii) The employer shall assure that, in the event of skin or eye exposure to liquid AN, the affected employee shall shower immediately to minimize the danger of skin absorption.

(c) Lunchrooms.

(i) Whenever food or beverages are consumed in the workplace, the employer shall provide lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees exposed to AN above the permissible exposure limits.

(ii) In addition, the employer shall also assure that employees exposed to AN above the permissible exposure limits wash their hands and face prior to eating.

(14) Medical surveillance.

(a) General.

(i) The employer shall institute a program of medical surveillance for each employee who is or will be exposed to AN above the action level. The employer shall provide each such employee with an opportunity for medical examinations and tests in accordance with this subsection.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.

(b) Initial examinations. At the time of initial assignment, or upon institution of the medical surveillance program, the employer shall provide each affected employee an opportunity for a medical examination, including at least the following elements:

(i) A work history and medical history with special attention to skin, respiratory, and gastrointestinal systems, and those non-specific symptoms, such as headache, nausea, vomiting, dizziness, weakness, or other central nervous system dysfunctions that may be associated with acute or chronic exposure to AN.

(ii) A physical examination giving particular attention to central nervous system, gastrointestinal system, respiratory system, skin and thyroid.

(iii) A 14" x 17" posteroanterior chest x-ray.

(iv) Further tests of the intestinal tract, including fecal occult blood screening, and proctosigmoidoscopy, for all workers 40 years of age or older, and for any other affected employees for whom, in the opinion of the physician, such testing is appropriate.

(c) Periodic examinations.

(i) The employer shall provide examinations specified in this subsection at least annually for all employees specified in subsection (14)(a) of this section.

(ii) If an employee has not had the examinations prescribed in subsection (14)(b) of this section within six months of termination of employment, the employer shall make such examination available to the employee upon such termination.

(d) Additional examinations. If the employee for any reason develops signs or symptoms commonly associated with exposure to AN, the employer shall provide appropriate examination and emergency medical treatment.

(e) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this standard and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The employee's representative exposure level;

(iv) The employee's anticipated or estimated exposure level (for preplacement examinations or in cases of exposure due to an emergency);

(v) A description of any personal protective equipment used or to be used; and

(vi) Information from previous medical examinations of the affected employee, which is not otherwise available to the examining physician.

(f) Physician's written opinion.

(i) The employer shall obtain a written opinion from the examining physician which shall include:

(A) The results of the medical examination and test performed;

(B) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at an increased risk of material impairment of the employee's health from exposure to AN;

(C) Any recommended limitations upon the employee's exposure to AN or upon the use of protective clothing and equipment such as respirators; and

(D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(ii) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure to AN.

(iii) The employer shall provide a copy of the written opinion to the affected employee.

(15) Employee information and training.

(a) Training program.

(i) The employer shall institute a training program for all employees where there is occupational exposure to AN and shall assure their participation in the training program.

(ii) The training program shall be provided at the time of initial assignment, or upon institution of the training program, and at least annually thereafter, and the employer shall assure that each employee is informed of the following:

(A) The information contained in Appendices A, B and C;

(B) The quantity, location, manner of use, release or storage of AN and the specific nature of operations which could result in exposure to AN, as well as any necessary protective steps;

(C) The purpose, proper use, and limitations of respirators and protective clothing;

(D) The purpose and a description of the medical surveillance program required by subsection (14) of this section;

(E) The emergency procedures developed, as required by subsection (9) of this section; and

(F) The engineering and work practice controls, their function and the employee's relationship thereto; and

(G) A review of this standard.

(b) Access to training materials.

(i) The employer shall make a copy of this standard and its appendices readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(16) Signs and labels.

(a) General.

(i) The employer may use labels or signs required by other statutes, regulations, or ordinances in addition to, or in combination with, signs and labels required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign or label, required by this subsection, which contradicts or detracts from such effects of the required sign or label.

(b) Signs.

(i) The employer shall post signs to clearly indicate all workplaces where AN concentrations exceed the permissible exposure limits. The signs shall bear the following legend:

DANGER
ACRYLONITRILE (AN)
CANCER HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS REQUIRED

(ii) The employer shall assure that signs required by this subsection are illuminated and cleaned as necessary so that the legend is readily visible.

(c) Labels.

(i) The employer shall assure that precautionary labels are affixed to all containers of AN, and to containers of PAN and products fabricated from PAN, except for those materials for which objective data is provided as to the conditions specified in subsection (1)(b) of this section. The employer shall assure that the labels remain affixed when the AN or PAN are sold, distributed or otherwise leave the employer's workplace.

(ii) The employer shall assure that the precautionary labels required by this subsection are readily visible and legible. The labels shall bear the following legend:

DANGER
CONTAINS ACRYLONITRILE (AN)
CANCER HAZARD

(17) Recordkeeping.

(a) Objective data for exempted operations.

(i) Where the processing, use, and handling of products fabricated from PAN are exempted pursuant to subsection (1)(b) of this section, the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.

(ii) This record shall include the following information:

(A) The relevant condition in subsection (1)(b) upon which exemption is based;

(B) The source of the objective data;

(C) The testing protocol, results of testing, and/or analysis of the material for the release of AN;

(D) A description of the operation exempted and how the data supports the exemption; and

(E) Other data relevant to the operations, materials, and processing covered by the exemption.

(iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(b) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required by subsection (5) of this section.

(ii) This record shall include:

(A) The dates, number, duration, and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure;

(B) A description of the sampling and analytical methods used and the data relied upon to establish that the methods

used meet the accuracy and precision requirements of subsection (5)(f) of this section;

(C) Type of respiratory protective devices worn, if any; and

(D) Name, social security number and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least 40 years or the duration of employment plus 20 years, whichever is longer.

(c) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by subsection (14) of this section.

(ii) This record shall include:

(A) A copy of the physicians' written opinions;

(B) Any employee medical complaints related to exposure to AN;

(C) A copy of the information provided to the physician as required by subsection (14)(f) of this section; and

(D) A copy of the employee's medical and work history.

(iii) The employer shall assure that this record be maintained for at least forty years or for the duration of employment plus twenty years, whichever is longer.

(d) Availability.

(i) The employer shall assure that all records required to be maintained by this section be made available upon request to the director for examination and copying.

(ii) Records required by subdivisions (a) through (c) of this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with WAC 296-62-05201 through 296-62-05209 and 296-62-05213 through 296-62-05217. Records required by subdivision (a) of this section shall be provided in the same manner as exposure monitoring records.

(iii) The employer shall assure that employee medical records required to be maintained by this section, be made available, upon request, for examination and copying, to the affected employee or former employee, or to a physician designated by the affected employee, former employee, or designated representative.

(e) Transfer of records.

(i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section.

(ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, these records shall be transmitted to the director.

(iii) At the expiration of the retention period for the records required to be maintained pursuant to this section, the employer shall transmit these records to the director.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in WAC 296-62-05215.

(18) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe any monitoring of employee exposure to AN conducted pursuant to subsection (5) of this section.

(b) Observation procedures.

(i) Whenever observation of the monitoring of employee exposure to AN requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with personal protective clothing or equipment required to be worn by employees working in the area, assure the use of such clothing and equipment, and require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the monitoring, observers shall be entitled:

(A) To receive an explanation of the measurement procedures;

(B) To observe all steps related to the measurement of airborne concentrations of AN performed at the place of exposure; and

(C) To record the results obtained.

(19) Appendices. The information contained in the appendices is not intended, by itself, to create any additional obligation not otherwise imposed, or to detract from any obligation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07336, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-11-021 (Order 88-04), § 296-62-07336, filed 5/11/88.]

WAC 296-62-07337 Appendix A—Substance safety data sheet for acrylonitrile. (1) Substance identification.

(a) Substance: Acrylonitrile (CH₂ CHCN).

(b) Synonyms: Propenenitrile; vinyl cyanide; cyanoethylene; AN; VCN; acylon; carbacryl; fumigrian; ventox.

(c) Acrylonitrile can be found as a liquid or vapor, and can also be found in polymer resins, rubbers, plastics, polyols, and other polymers having acrylonitrile as a raw or intermediate material.

(d) AN is used in the manufacture of acrylic and modiacrylic fibers, acrylic plastics and resins, speciality polymers, nitrile rubbers, and other organic chemicals. It has also been used as a fumigant.

(e) Appearance and odor: Colorless to pale yellow liquid with a pungent odor which can only be detected at concentrations above the permissible exposure level, in a range of 13-19 parts AN per million parts of air (13-19 ppm).

(f) Permissible exposure: Exposure may not exceed either:

(i) Two parts AN per million parts of air (2 ppm) averaged over the eight-hour workday; or

(ii) Ten parts AN per million parts of air (10 ppm) averaged over any fifteen-minute period in the workday.

(iii) In addition, skin and eye contact with liquid AN is prohibited.

(2) Health hazard data.

(a) Acrylonitrile can affect your body if you inhale the vapor (breathing), if it comes in contact with your eyes or skin, or if you swallow it. It may enter your body through your skin.

(b) Effects of overexposure:

(i) Short-term exposure: Acrylonitrile can cause eye irritation, nausea, vomiting, headache, sneezing, weakness, and light-headedness. At high concentrations, the effects of expo-

sure may go on to loss of consciousness and death. When acrylonitrile is held in contact with the skin after being absorbed into shoe leather or clothing, it may produce blisters following several hours of no apparent effect. Unless the shoes or clothing are removed immediately and the area washed, blistering will occur. Usually there is no pain or inflammation associated with blister formation.

(ii) Long-term exposure: Acrylonitrile has been shown to cause cancer in laboratory animals and has been associated with higher incidences of cancer in humans. Repeated or prolonged exposure of the skin to acrylonitrile may produce irritation and dermatitis.

(iii) Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms and suspect they are caused by exposure to acrylonitrile.

(3) Emergency first aid procedures.

(a) Eye exposure: If acrylonitrile gets into your eyes, wash your eyes immediately with large amounts of water, lifting the lower and upper lids occasionally. Get medical attention immediately. Contact lenses should not be worn when working with this chemical.

(b) Skin exposure: If acrylonitrile gets on your skin, immediately wash the contaminated skin with water. If acrylonitrile soaks through your clothing, especially your shoes, remove the clothing immediately and wash the skin with water. If symptoms occur after washing, get medical attention immediately. Thoroughly wash the clothing before reusing. Contaminated leather shoes or other leather articles should be discarded.

(c) Inhalation: If you or any other person breathes in large amounts of acrylonitrile, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

(d) Swallowing: When acrylonitrile has been swallowed, give the person large quantities of water immediately. After the water has been swallowed, try to get the person to vomit by having him touch the back of his throat with his finger. Do not make an unconscious person vomit. Get medical attention immediately.

(e) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, notify someone else and put into effect the established emergency procedures. Do not become a casualty yourself. Understand your emergency rescue procedures and know the location of the emergency equipment before the need arises.

(f) Special first aid procedures: First aid kits containing an adequate supply (at least two dozen) of amyl nitrite pearls, each containing 0.3 ml, should be maintained at each site where acrylonitrile is used. When a person is suspected of receiving an overexposure to acrylonitrile, immediately remove that person from the contaminated area using established rescue procedures. Contaminated clothing must be removed and the acrylonitrile washed from the skin immediately. Artificial respiration should be started at once if breathing has stopped. If the person is unconscious, amyl nitrite may be used as an antidote by a properly trained individual in accordance with established emergency procedures. Medical aid should be obtained immediately.

(4) Respirators and protective clothing.

(a) Respirators: You may be required to wear a respirator for nonroutine activities, in emergencies, while your employer is in the process of reducing acrylonitrile exposures through engineering controls, and in areas where engineering controls are not feasible. If respirators are worn, they must have a label issued by the National Institute for Occupational Safety and Health under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with organic vapors. For effective protection, respirators must fit your face and head snugly. Respirators should not be loosened or removed in work situations where their use is required.

(b) Supplied-air suits: In some work situations, the wearing of supplied-air suits may be necessary. Your employer must instruct you in their proper use and operation.

(c) Protective clothing:

(i) You must wear impervious clothing, gloves, face shield, or other appropriate protective clothing to prevent skin contact with liquid acrylonitrile. Where protective clothing is required, your employer is required to provide clean garments to you as necessary to assume that the clothing protects you adequately.

(ii) Replace or repair impervious clothing that has developed leaks.

(iii) Acrylonitrile should never be allowed to remain on the skin. Clothing and shoes which are not impervious to acrylonitrile should not be allowed to become contaminated with acrylonitrile, and if they do the clothing and shoes should be promptly removed and decontaminated. The clothing should be laundered or discarded after the AN is removed. Once acrylonitrile penetrates shoes or other leather articles, they should not be worn again.

(d) Eye protection: You must wear splashproof safety goggles in areas where liquid acrylonitrile may contact your eyes. In addition, contact lenses should not be worn in areas where eye contact with acrylonitrile can occur.

(5) Precautions for safe use, handling, and storage.

(a) Acrylonitrile is a flammable liquid, and its vapors can easily form explosive mixtures in air.

(b) Acrylonitrile must be stored in tightly closed containers in a cool, well-ventilated area, away from heat, sparks, flames, strong oxidizers (especially bromine), strong bases, copper, copper alloys, ammonia, and amines.

(c) Sources of ignition such as smoking and open flames are prohibited wherever acrylonitrile is handled, used, or stored in a manner that could create a potential fire or explosion hazard.

(d) You should use nonsparking tools when opening or closing metal containers of acrylonitrile, and containers must be bonded and grounded when pouring or transferring liquid acrylonitrile.

(e) You must immediately remove any nonimpervious clothing that becomes wetted with acrylonitrile, and this clothing must not be reworn until the acrylonitrile is removed from the clothing.

(f) Impervious clothing wet with liquid acrylonitrile can be easily ignited. This clothing must be washed down with water before you remove it.

(g) If your skin becomes wet with liquid acrylonitrile, you must promptly and thoroughly wash or shower with soap or mild detergent to remove any acrylonitrile from your skin.

(h) You must not keep food, beverages, or smoking materials, nor are you permitted to eat or smoke in regulated areas where acrylonitrile concentrations are above the permissible exposure limits.

(i) If you contact liquid acrylonitrile, you must wash your hands thoroughly with soap or mild detergent and water before eating, smoking, or using toilet facilities.

(j) Fire extinguishers and quick drenching facilities must be readily available, and you should know where they are and how to operate them.

(k) Ask your supervisor where acrylonitrile is used in your work area and for any additional plant safety and health rules.

(6) Access to information.

(a) Each year, your employer is required to inform you of the information contained in this Substance Safety Data Sheet for acrylonitrile. In addition, your employer must instruct you in the proper work practices for using acrylonitrile, emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to acrylonitrile. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, he or she is required to inform you of the actions which are being taken to reduce your exposure to within permissible exposure limits.

(c) Your employer is required to keep records of your exposures and medical examinations. These records must be kept by the employer for at least forty years or for the period of your employment plus twenty years, whichever is longer.

(d) Your employer is required to release your exposure and medical records to you or your representative upon your request.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07337, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07337, filed 7/20/94, effective 9/20/94; 88-11-021 (Order 88-04), § 296-62-07337, filed 5/11/88.]

WAC 296-62-07342 1,2-Dibromo-3-chloropropane.

(1) Scope and application.

(a) This section applies to occupational exposure to 1,2-dibromo-3-chloropropane (DBCP).

(b) This section does not apply to:

(i) Exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or

(ii) The storage, transportation, distribution or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquids, except for the requirements of subsections (11), (16) and (17) of this section.

(2) Definitions applicable to this section:

(a) "Authorized person" - any person specifically authorized by the employer and whose duties require the person to be present in areas where DBCP is present; and any person

entering this area as a designated representative of employees exercising an opportunity to observe employee exposure monitoring.

(b) "DBCP" - 1,2-dibromo-3-chloropropane, Chemical Abstracts Service Registry Number 96-12-8, and includes all forms of DBCP.

(c) "Director" - the director of labor and industries, or his authorized representative.

(d) "Emergency" - any occurrence such as, but not limited to equipment failure, rupture of containers, or failure of control equipment which may, or does, result in unexpected release of DBCP.

(3) Permissible exposure limits.

(a) Inhalation.

(i) Time-weighted average limit (TWA). The employer shall assure that no employee is exposed to an airborne concentration in excess of 1 part DBCP per billion part of air (ppb) as an eight-hour time-weighted average.

(ii) Ceiling limit. The employer shall assure that no employee is exposed to an airborne concentration in excess of 5 parts DBCP per billion parts of air (ppb) as averaged over any 15 minutes during the working day.

(b) Dermal and eye exposure. The employer shall assure that no employee is exposed to eye or skin contact with DBCP.

(4) Notification of use. Within ten days of the effective date of this section or within ten days following the introduction of DBCP into the workplace, every employer who has a workplace where DBCP is present shall report the following information to the director for each such workplace:

(a) The address and location of each workplace in which DBCP is present;

(b) A brief description of each process or operation which may result in employee exposure to DBCP;

(c) The number of employees engaged in each process or operation who may be exposed to DBCP and an estimate of the frequency and degree of exposure that occurs;

(d) A brief description of the employer's safety and health program as it relates to limitation of employee exposure to DBCP.

(5) Regulated areas. The employer shall establish, within each place of employment, regulated areas wherever DBCP concentrations are in excess of the permissible exposure limit.

(a) The employer shall limit access to regulated areas to authorized persons.

(b) All employees entering or working in a regulated area shall wear respiratory protection in accordance with Table I.

(6) Exposure monitoring.

(a) General. Determinations of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to DBCP over an eight-hour period. (For the purposes of this section, employee exposure is that exposure which would occur if the employee were not using a respirator.)

(b) Initial. Each employer who has a place of employment in which DBCP is present shall monitor each workplace and work operation to accurately determine the airborne concentrations of DBCP to which employees may be exposed.

(c) Frequency.

(i) If the monitoring required by this section reveals employee exposures to be below the permissible exposure limits, the employer shall repeat these determinations at least quarterly.

(ii) If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer shall repeat these determinations for each such employee at least monthly. The employer shall continue these monthly determinations until at least two consecutive measurements, taken at least seven days apart, are below the permissible exposure limit, thereafter the employer shall monitor at least quarterly.

(d) Additional. Whenever there has been a production process, control or personnel change which may result in any new or additional exposure to DBCP, or whenever the employer has any other reason to suspect a change which may result in new or additional exposure to DBCP, additional monitoring which complies with subsection (6) shall be conducted.

(e) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of results which represent the employee's exposure.

(ii) Whenever the results indicate that employee exposure exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action being taken to reduce exposure to or below the permissible exposure limits.

(f) Accuracy of measurement. The method of measurement shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for concentrations of DBCP at or above the permissible exposure limits.

(7) Methods of compliance.

(a) Priority of compliance methods. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to DBCP at or below the permissible exposure limit, except to the extent that the employer establishes that such controls are not feasible. Where feasible engineering and work practice controls are not sufficient to reduce employee exposures to within the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls, and shall supplement them by use of respiratory protection.

(b) Compliance program.

(i) The employer shall establish and implement a written program to reduce employee exposure to DBCP to or below the permissible exposure limit solely by means of engineering and work practice controls as required by this section.

(ii) The written program shall include a detailed schedule for development and implementation of the engineering and work practice controls. These plans shall be revised at least every six months to reflect the current status of the program.

(iii) Written plans for these compliance programs shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, and any affected employee or designated representative of employees.

(iv) The employer shall institute and maintain at least the controls described in his most recent written compliance program.

(8) Respiratory protection.

(a) General. For employees who are required to use respirators under this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Period necessary to install or implement feasible engineering and work-practice controls;

(ii) Maintenance and repair activities for which engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limit;

(iv) Emergencies.

(b) The employer must establish, implement, and maintain a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(c) Respirator selection. The employer must select the appropriate respirator from Table I of this subsection.

TABLE I
RESPIRATORY PROTECTION FOR DBCP

Concentration Not Greater Than	Respirator Type
(a) 10 ppb:	(i) Any supplied-air respirator. (ii) Any self-contained breathing apparatus.
(b) 50 ppb:	(i) Any supplied-air respirator with full facepiece, helmet or hood. (ii) Any self-contained breathing apparatus with full facepiece.
(c) 250 ppb:	(i) A Type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous flow mode.
(d) 500 ppb:	(i) A Type C supplied-air respirator with full facepiece operated in pressure-demand mode with full facepiece.
(e) Greater than 500 ppb or entry into unknown concentrations:	(i) A combination respirator which includes a Type C supplied-air respirator with full facepiece operated in pressure-demand mode and an auxiliary self-contained breathing apparatus. (ii) A self-contained breathing apparatus with full facepiece operated in pressure-demand mode.

TABLE I
RESPIRATORY PROTECTION FOR DBCP

Concentration Not Greater Than	Respirator Type
(f) Firefighting:	(i) A self-contained breathing apparatus with full facepiece operated in pressure-demand mode.

(9) Reserved.

(10) Emergency situations.

(a) Written plans.

(i) A written plan for emergency situations shall be developed for each workplace in which DBCP is present.

(ii) Appropriate portions of the plan shall be implemented in the event of an emergency.

(b) Employees engaged in correcting conditions shall be equipped as required in subsection (11) of this section until the emergency is abated.

(c) Evacuation. Employees not engaged in correcting the emergency shall be removed and restricted from the area and normal operations in the affected area shall not be resumed until the emergency is abated.

(d) Alerting employees. Where there is a possibility of employee exposure to DBCP due to the occurrence of an emergency, a general alarm shall be installed and maintained to promptly alert employees of such occurrences.

(e) Medical surveillance. For any employee exposed to DBCP in an emergency situation, the employer shall provide medical surveillance in accordance with subsection (14) of this section.

(f) Exposure monitoring.

(i) Following an emergency, the employer shall conduct monitoring which complies with subsection (6) of this section.

(ii) In workplaces not normally subject to periodic monitoring, the employer may terminate monitoring when two consecutive measurements indicate exposures below the permissible exposure limit.

(11) Protective clothing and equipment.

(a) Provision and use. Where eye or skin contact with liquid or solid DBCP may occur, employers shall provide at no cost to the employee, and assure that employees wear impermeable protective clothing and equipment in accordance with WAC 296-24-07501 and 296-24-07801 to protect the area of the body which may come in contact with DBCP.

(b) Cleaning and replacement.

(i) The employer shall clean, launder, maintain, or replace protective clothing and equipment required by this subsection to maintain their effectiveness. In addition, the employer shall provide clean protective clothing and equipment at least daily to each affected employee.

(ii) Removal and storage.

(A) The employer shall assure that employees remove DBCP contaminated work clothing only in change rooms provided in accordance with subsection (13) of this section.

(B) The employer shall assure that employees promptly remove any protective clothing and equipment which becomes contaminated with DBCP-containing liquids and

solids. This clothing shall not be reworn until the DBCP has been removed from the clothing or equipment.

(C) The employer shall assure that no employee takes DBCP contaminated protective devices and work clothing out of the change room, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(iii) The employer shall assure that DBCP-contaminated protective work clothing and equipment is placed and stored in closed containers which prevent dispersion of DBCP outside the container.

(iv) The employer shall inform any person who launders or cleans DBCP-contaminated protective clothing or equipment of the potentially harmful effects of exposure to DBCP.

(v) The employer shall assure that the containers of contaminated protective clothing and equipment which are to be removed from the workplace for any reason are labeled in accordance with subsection (16)(c) of this section.

(vi) The employer shall prohibit the removal of DBCP from protective clothing and equipment by blowing or shaking.

(12) Housekeeping.

(a) Surfaces.

(i) All surfaces shall be maintained free of accumulations of DBCP.

(ii) Dry sweeping and the use of air for the cleaning of floors and other surfaces where DBCP dust or liquids are found is prohibited.

(iii) Where vacuuming methods are selected, either portable units or a permanent system may be used.

(A) If a portable unit is selected, the exhaust shall be attached to the general workplace exhaust ventilation system or collected within the vacuum unit, equipped with high efficiency filters or other appropriate means of contaminant removal, so that DBCP is not reintroduced into the workplace air; and

(B) Portable vacuum units used to collect DBCP may not be used for other cleaning purposes and shall be labeled as prescribed by subsection (16)(c) of this section.

(iv) Cleaning of floors and other contaminated surfaces may not be performed by washing down with a hose, unless a fine spray has first been laid down.

(b) Liquids. Where DBCP is present in a liquid form, or as a resultant vapor, all containers or vessels containing DBCP shall be enclosed to the maximum extent feasible and tightly covered when not in use.

(c) Waste disposal. DBCP waste, scrap, debris, bags, containers or equipment, shall be disposed in sealed bags or other closed containers which prevent dispersion of DBCP outside the container.

(13) Hygiene facilities and practices.

(a) Change rooms. The employer shall provide clean change rooms equipped with storage facilities for street clothes and separate storage facilities for protective clothing and equipment whenever employees are required to wear protective clothing and equipment in accordance with subsections (8), (9) and (11) of this section.

(b) Showers.

(i) The employer shall assure that employees working in the regulated area shower at the end of the work shift.

(ii) The employer shall assure that employees whose skin becomes contaminated with DBCP-containing liquids or solids immediately wash or shower to remove any DBCP from the skin.

(iii) The employer shall provide shower facilities in accordance with WAC 296-24-12009 (3)(c).

(c) Lunchrooms. The employer shall provide lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees working in regulated areas.

(d) Lavatories.

(i) The employer shall assure that employees working in the regulated area remove protective clothing and wash their hands and face prior to eating.

(ii) The employer shall provide a sufficient number of lavatory facilities which comply with WAC 296-24-12009 (1) and (2).

(e) Prohibition of activities in regulated areas. The employer shall assure that, in regulated areas, food or beverages are not present or consumed, smoking products and implements are not present or used, and cosmetics are not present or applied.

(14) Medical surveillance.

(a) General. The employer shall institute a program of medical surveillance for each employee who is or will be exposed, without regard to the use of respirators, to DBCP. The employer shall provide each such employee with an opportunity for medical examinations and tests in accordance with this subsection. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.

(b) Frequency and content. At the time of initial assignment, annually thereafter, and whenever exposure to DBCP occurs, the employer shall provide a medical examination for employees who work in regulated areas, which includes at least the following:

(i) A complete medical and occupational history with emphasis on reproductive history.

(ii) A complete physical examination with emphasis on the genito-urinary tract, testicle size, and body habitus including the following tests:

(A) Sperm count;

(B) Complete urinalysis (U/A);

(C) Complete blood count; and

(D) Thyroid profile.

(iii) A serum specimen shall be obtained and the following determinations made by radioimmunoassay techniques utilizing National Institutes of Health (NIH) specific antigen or one of equivalent sensitivity:

(A) Serum multiphasic analysis (SMA 12);

(B) Serum follicle stimulating hormone (FSH);

(C) Serum luteinizing hormone (LH); and

(D) Serum estrogen (females).

(iv) Any other tests deemed appropriate by the examining physician.

(c) Additional examinations. If the employee for any reason develops signs or symptoms commonly associated with exposure to DBCP, the employer shall provide the employee

with a medical examination which shall include those elements considered appropriate by the examining physician.

(d) Information provided to the physician. The employer shall provide the following information to the examining physician:

- (i) A copy of this standard and its appendices;
- (ii) A description of the affected employee's duties as they relate to the employee's exposure;
- (iii) The level of DBCP to which the employee is exposed; and
- (iv) A description of any personal protective equipment used or to be used.

(e) Physician's written opinion.

(i) For each examination under this section, the employer shall obtain and provide the employee with a written opinion from the examining physician which shall include:

- (A) The results of the medical tests performed;
- (B) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at an increased risk of material impairment of health from exposure to DBCP;

(C) Any recommended limitations upon the employee's exposure to DBCP or upon the use of protective clothing and equipment such as respirators; and

(D) A statement that the employee was informed by the physician of the results of the medical examination, and any medical conditions which require further examination or treatment.

(ii) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure to DBCP.

(iii) The employer shall provide a copy of the written opinion to the affected employee.

(f) Emergency situations. If the employee is exposed to DBCP in an emergency situation, the employer shall provide the employee with a sperm count test as soon as practicable, or, if the employee is unable to produce a semen specimen, the hormone tests contained in subsection (14)(b) of this section. The employer shall provide these same tests three months later.

(15) Employee information and training.

(a) Training program.

(i) Within thirty days of the effective date of this standard, the employer shall institute a training program for all employees who may be exposed to DBCP and shall assure their participation in such training program.

(ii) The employer shall assure that each employee is informed of the following:

(A) The information contained in Appendices A, B and C;

(B) The quantity, location, manner of use, release or storage of DBCP and the specific nature of operations which could result in exposure to DBCP as well as any necessary protective steps;

(C) The purpose, proper use, limitations, and other training requirements covering respiratory protection as required in chapter 296-62 WAC, Part E;

(D) The purpose and description of the medical surveillance program required by subsection (14) of this section; and

(E) A review of this standard.

(b) Access to training materials.

(i) The employer shall make a copy of this standard and its appendices readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(16) Signs and labels.

(a) General.

(i) The employer may use labels or signs required by other statutes, regulations, or ordinances in addition to or in combination with, signs and labels required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign or label required by this subsection which contradicts or detracts from the required sign or label.

(b) Signs.

(i) The employer shall post signs to clearly indicate all work areas where DBCP may be present. These signs shall bear the legend:

DANGER
1,2-Dibromo-3-chloropropane

(Insert appropriate trade or common names)

CANCER HAZARD

AUTHORIZED PERSONNEL ONLY

(ii) Where airborne concentrations of DBCP exceed the permissible exposure limits, the signs shall bear the additional legend:

RESPIRATOR REQUIRED

(c) Labels.

(i) The employer shall assure that precautionary labels are affixed to all containers of DBCP and of products containing DBCP, and that the labels remain affixed when the DBCP or products containing DBCP are sold, distributed, or otherwise leave the employer's workplace. Where DBCP or products containing DBCP are sold, distributed or otherwise leave the employer's workplace bearing appropriate labels required by EPA under the regulations in 40 CFR Part 162, the labels required by this subsection need not be affixed.

(ii) The employer shall assure that the precautionary labels required by this subsection are readily visible and legible. The labels shall bear the following legend:

DANGER
1,2-Dibromo-3-chloropropane
CANCER HAZARD

(17) Recordkeeping.

(a) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required by subsection (6) of this section.

(ii) This record shall include:

(A) The dates, number, duration and results of each of the samples taken, including a description of the sampling

procedure used to determine representative employee exposure;

(B) A description of the sampling and analytical methods used;

(C) Type of respiratory worn, if any; and

(D) Name, Social Security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least forty years or the duration of employment plus twenty years, whichever is longer.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance required by subsection (14) of this section.

(ii) This record shall include:

(A) The name and Social Security number of the employee;

(B) A copy of the physician's written opinion;

(C) Any employee medical complaints related to exposure to DBCP;

(D) A copy of the information provided the physician as required by subsection (14)(c) of this section; and

(E) A copy of the employee's medical and work history.

(iii) The employer shall maintain this record for at least forty years or the duration of employment plus twenty years, whichever is longer.

(c) Availability.

(i) The employer shall assure that all records required to be maintained by this section be made available upon request to the director for examination and copying.

(ii) Employee exposure monitoring records and employee medical records required by this subsection shall be provided upon request to employees' designated representatives and the assistant director in accordance with WAC 296-62-05201 through 296-62-05209; and 296-62-05213 through 296-62-05217.

(d) Transfer of records.

(i) If the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section for the prescribed period.

(ii) If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall transmit these records by mail to the director.

(iii) At the expiration of the retention period for the records required to be maintained under this section, the employer shall transmit these records by mail to the director.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in WAC 296-62-05215.

(18) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe any monitoring of employee exposure to DBCP conducted under subsection (6) of this section.

(b) Observation procedures.

(i) Whenever observation of the measuring or monitoring of employee exposure to DBCP requires entry into an area where the use of protective clothing or equipment is

required, the employer shall provide the observer with personal protective clothing or equipment required to be worn by employees working in the area, assure the use of such clothing and equipment, and require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the monitoring or measurement, observers shall be entitled to:

(A) Receive an explanation of the measurement procedures;

(B) Observe all steps related to the measurement of airborne concentrations of DBCP performed at the place of exposure; and

(C) Record the results obtained.

(19) Appendices. The information contained in the appendices is not intended, by itself, to create any additional obligations not otherwise imposed or to detract from any existing obligation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07342, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07342, filed 4/10/96, effective 6/1/96; 88-11-021 (Order 88-04), § 296-62-07342, filed 5/11/88.]

WAC 296-62-07343 Appendix A—Substance safety data sheet for DBCP. (1) Substance identification.

(a) Synonyms and trades names: DBCP; Dibromochloropropane; Fumazone (Dow Chemical Company TM); Nemaflume; Nemaflon (Shell Chemical Co. TM); Nemaflon; BBC 12; and OS 1879.

(b) Permissible exposure:

(i) Airborne. 1 part DBCP vapor per billion parts of air (1 ppb); time-weighted average (TWA) for an eight-hour workday.

(ii) Dermal. Eye contact and skin contact with DBCP are prohibited.

(c) Appearance and odor: Technical grade DBCP is a dense yellow or amber liquid with a pungent odor. It may also appear in granular form, or blended in varying concentrations with other liquids.

(d) Uses: DBCP is used to control nematodes, very small worm-like plant parasites, on crops including cotton, soybeans, fruits, nuts, vegetables and ornamentals.

(2) Health hazard data.

(a) Routes of entry: Employees may be exposed:

(i) Through inhalation (breathing);

(ii) Through ingestion (swallowing);

(iii) Skin contact; and

(iv) Eye contact.

(b) Effects of exposure:

(i) Acute exposure. DBCP may cause drowsiness, irritation of the eyes, nose, throat and skin, nausea and vomiting. In addition, overexposure may cause damage to the lungs, liver or kidneys.

(ii) Chronic exposure. Prolonged or repeated exposure to DBCP has been shown to cause sterility in humans. It also has been shown to produce cancer and sterility in laboratory animals and has been determined to constitute an increased risk of cancer in people.

(iii) Reporting signs and symptoms. If you develop any of the above signs or symptoms that you think are caused by exposure to DBCP, you should inform your employer.

(3) Emergency first-aid procedures.

(a) Eye exposure. If DBCP liquid or dust containing DBCP gets into your eyes, wash your eyes immediately with large amounts of water, lifting the lower and upper lids occasionally. Get medical attention immediately. Contact lenses should not be worn when working with DBCP.

(b) Skin exposure. If DBCP liquids or dusts containing DBCP get on your skin, immediately wash using soap or mild detergent and water. If DBCP liquids or dusts containing DBCP penetrate through your clothing, remove the clothing immediately and wash. If irritation is present after washing get medical attention.

(c) Breathing. If you or any person breathe in large amounts of DBCP, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Do not use mouth-to-mouth. Keep the affected person warm and at rest. Get medical attention as soon as possible.

(d) Swallowing. When DBCP has been swallowed and the person is conscious, give the person large amounts of water immediately. After the water has been swallowed, try to get the person to vomit by having him touch the back of his throat with his finger. Do not make an unconscious person vomit. Get medical attention immediately.

(e) Rescue. Notify someone. Put into effect the established emergency rescue procedures. Know the locations of the emergency rescue equipment before the need arises.

(4) Respirators and protective clothing.

(a) Respirators. You may be required to wear a respirator in emergencies and while your employer is in the process of reducing DBCP exposures through engineering controls. If respirators are worn, they must have a label issued by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with organic vapors. For effective protection, a respirator must fit your face and head snugly. The respirator should not be loosened or removed in work situations where its use is required. Respirators must not be loosened or removed in work situations where their use is required.

(b) Protective clothing. When working with DBCP you must wear for your protection impermeable work clothing provided by your employer. (Standard rubber and neoprene protective clothing do not offer adequate protection). DBCP must never be allowed to remain on the skin. Clothing and shoes must not be allowed to become contaminated with DBCP, and if they do, they must be promptly removed and not worn again until completely free of DBCP. Turn in impermeable clothing that has developed leaks for repair or replacement.

(c) Eye protection. You must wear splashproof safety goggles where there is any possibility of DBCP liquid or dust contacting your eyes.

(5) Precautions for safe use, handling, and storage.

(a) DBCP must be stored in tightly closed containers in a cool, well-ventilated area.

(b) If your work clothing may have become contaminated with DBCP, or liquids or dusts containing DBCP, you must change into uncontaminated clothing before leaving the work premises.

(c) You must promptly remove any protective clothing that becomes contaminated with DBCP. This clothing must not be reworn until the DBCP is removed from the clothing.

(d) If your skin becomes contaminated with DBCP, you must immediately and thoroughly wash or shower with soap or mild detergent and water to remove any DBCP from your skin.

(e) You must not keep food, beverages, cosmetics, or smoking materials, nor eat or smoke, in regulated areas.

(f) If you work in a regulated area, you must wash your hands thoroughly with soap or mild detergent and water, before eating, smoking or using toilet facilities.

(g) If you work in a regulated area, you must remove any protective equipment or clothing before leaving the regulated area.

(h) Ask your supervisor where DBCP is used in your work area and for any additional safety and health rules.

(6) Access to information.

(a) Each year, your employer is required to inform you of the information contained in this substance safety data sheet for DBCP. In addition, your employer must instruct you in the safe use of DBCP, emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to DBCP. You or your representative have the right to observe employee exposure measurements and to record the result obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, they are required to inform you of the actions which are being taken to reduce your exposure.

(c) Your employer is required to keep records of your exposure and medical examinations. Your employer is required to keep exposure and medical data for at least forty years or the duration of your employment plus twenty years, whichever is longer.

(d) Your employer is required to release exposure and medical records to you, your physician, or other individual designated by you upon your written request.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07343, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07343, filed 7/20/94, effective 9/20/94; 88-11-021 (Order 88-04), § 296-62-07343, filed 5/11/88.]

WAC 296-62-07347 Inorganic arsenic. (1) Scope and application. This section applies to all occupational exposures to inorganic arsenic except that this section does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.

(2) Definitions.

(a) "Action level" - a concentration of inorganic arsenic of 5 micrograms per cubic meter of air ($5 \mu\text{g}/\text{m}^3$) averaged over any eight-hour period.

(b) "Authorized person" - any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of

exercising the right to observe monitoring and measuring procedures under subsection (5) of this section.

(c) "Director" - the director of the department of labor and industries, or his/her designated representative.

(d) "Inorganic arsenic" - copper aceto-arsenite and all inorganic compounds containing arsenic except arsine, measured as arsenic (As).

(3) Permissible exposure limit. The employer shall assure that no employee is exposed to inorganic arsenic at concentrations greater than 10 micrograms per cubic meter of air ($10 \mu\text{g}/\text{m}^3$), averaged over any eight-hour period.

(4) Notification of use.

(a) Within sixty days after the introduction of inorganic arsenic into the workplace, every employer who is required to establish a regulated area in his/her workplaces shall report in writing to the department of labor and industries for each such workplace:

(i) The address of each such workplace;

(ii) The approximate number of employees who will be working in regulated areas; and

(iii) A brief summary of the operations creating the exposure and the actions which the employer intends to take to reduce exposures.

(b) Whenever there has been a significant change in the information required by subsection (4)(a) of this section, the employer shall report the changes in writing within sixty days to the department of labor and industries.

(5) Exposure monitoring.

(a) General.

(i) Determinations of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to inorganic arsenic over an eight-hour period.

(ii) For the purposes of this section, employee exposure is that exposure which would occur if the employee were not using a respirator.

(iii) The employer shall collect full shift (for at least seven continuous hours) personal samples including at least one sample for each shift for each job classification in each work area.

(b) Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall monitor each such workplace and work operation to accurately determine the airborne concentration of inorganic arsenic to which employees may be exposed.

(c) Frequency.

(i) If the initial monitoring reveals employee exposure to be below the action level the measurements need not be repeated except as otherwise provided in subsection (5)(d) of this section.

(ii) If the initial monitoring, required by this section, or subsequent monitoring reveals employee exposure to be above the permissible exposure limit, the employer shall repeat monitoring at least quarterly.

(iii) If the initial monitoring, required by this section, or subsequent monitoring reveals employee exposure to be above the action level and below the permissible exposure limit the employee shall repeat monitoring at least every six months.

(iv) The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the action level at which time the employer may discontinue monitoring for that employee until such time as any of the events in subsection (5)(d) of this section occur.

(d) Additional monitoring. Whenever there has been a production, process, control or personal change which may result in new or additional exposure to inorganic arsenic, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to inorganic arsenic, additional monitoring which complies with subsection (5) of this section shall be conducted.

(e) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposures.

(ii) Whenever the results indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

(f) Accuracy of measurement.

(i) The employer shall use a method of monitoring and measurement which has an accuracy (with a confidence level of 95 percent) of not less than plus or minus 25 percent for concentrations of inorganic arsenic greater than or equal to $10 \mu\text{g}/\text{m}^3$.

(ii) The employer shall use a method of monitoring and measurement which has an accuracy (with confidence level of 95 percent) of not less than plus or minus 35 percent for concentrations of inorganic arsenic greater than $5 \mu\text{g}/\text{m}^3$ but less than $10 \mu\text{g}/\text{m}^3$.

(6) Regulated area.

(a) Establishment. The employer shall establish regulated areas where worker exposures to inorganic arsenic, without regard to the use of respirators, are in excess of the permissible limit.

(b) Demarcation. Regulated areas shall be demarcated and segregated from the rest of the workplace in any manner that minimizes the number of persons who will be exposed to inorganic arsenic.

(c) Access. Access to regulated areas shall be limited to authorized persons or to persons otherwise authorized by the Act or regulations issued pursuant thereto to enter such areas.

(d) Provision of respirators. All persons entering a regulated area shall be supplied with a respirator, selected in accordance with subsection (8)(c) of this section.

(e) Prohibited activities. The employer shall assure that in regulated areas, food or beverages are not consumed, smoking products, chewing tobacco and gum are not used and cosmetics are not applied, except that these activities may be conducted in the lunchrooms, change rooms and showers required under subsection (12) of this section. Drinking water may be consumed in the regulated area.

(7) Methods of compliance.

(a) Controls.

(i) The employer shall institute engineering and work practice controls to reduce exposures to or below the permis-

sible exposure limit, except to the extent that the employer can establish that such controls are not feasible.

(ii) Where engineering and work practice controls are not sufficient to reduce exposures to or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest levels achievable by these controls and shall be supplemented by the use of respirators in accordance with subsection (8) of this section and other necessary personal protective equipment. Employee rotation is not required as a control strategy before respiratory protection is instituted.

(b) Compliance program.

(i) The employer shall establish and implement a written program to reduce exposures to or below the permissible exposure limit by means of engineering and work practice controls.

(ii) Written plans for these compliance programs shall include at least the following:

(A) A description of each operation in which inorganic arsenic is emitted; e.g., machinery used, material processed, controls in place, crew size, operating procedures and maintenance practices;

(B) Engineering plans and studies used to determine methods selected for controlling exposure to inorganic arsenic;

(C) A report of the technology considered in meeting the permissible exposure limit;

(D) Monitoring data;

(E) A detailed schedule for implementation of the engineering controls and work practices that cannot be implemented immediately and for the adaption and implementation of any additional engineering and work practices necessary to meet the permissible exposure limit;

(F) Whenever the employer will not achieve the permissible exposure limit with engineering controls and work practices, the employer shall include in the compliance plan an analysis of the effectiveness of the various controls, shall install engineering controls and institute work practices on the quickest schedule feasible, and shall include in the compliance plan and implement a program to minimize the discomfort and maximize the effectiveness of respirator use; and

(G) Other relevant information.

(iii) Written plans for such a program shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, any affected employee or authorized employee representatives.

(iv) The plans required by this subsection shall be revised and updated at least every six months to reflect the current status of the program.

(8) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Period necessary to install or implement feasible engineering or work-practice controls;

(ii) Work operations, such as maintenance and repair activities, in which the employer establishes that engineering and work-practice controls are not feasible;

(iii) Work operations for which engineering work-practice controls are not yet sufficient to reduce employee exposures to or below the permissible exposure limit;

(iv) Emergencies.

(b) Respirator program.

(i) The employer must establish, implement, and maintain a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(ii) If an employee exhibits breathing difficulty during fit testing or respirator use, they must be examined by a physician trained in pulmonary medicine to determine whether they can use a respirator while performing the required duty.

(c) Respirator selection.

(i) The employer must use Table I of this section to select the appropriate respirator or combination of respirators for inorganic arsenic compounds without significant vapor pressure, and Table II of this section to select the appropriate respirator or combination of respirators for inorganic arsenic compounds that have significant vapor pressure.

(ii) Where employee exposures exceed the permissible exposure limit for inorganic arsenic and also exceed the relevant limit for other gases (for example, sulfur dioxide), any air-purifying respirator provided to the employee as specified by this section must have a combination high-efficiency filter with an appropriate gas sorbent. (See footnote in Table I)

(iii) Employees required to use respirators may choose, and the employer must provide, a powered air-purifying respirator if it will provide proper protection. In addition, the employer must provide a combination dust and acid-gas respirator to employees who are exposed to gases over the relevant exposure limits.

TABLE I

RESPIRATORY PROTECTION FOR INORGANIC ARSENIC PARTICULATE EXCEPT FOR THOSE WITH SIGNIFICANT VAPOR PRESSURE

Concentration of Inorganic Arsenic (as As) or Condition of Use	Required Respirator
(i) Unknown or greater or lesser than 20,000 $\mu\text{g}/\text{m}^3$ (20 mg/m^3) firefighting.	(A) Any full facepiece self-contained or breathing apparatus operated in positive pressure mode.
(ii) Not greater than 20,000 $\mu\text{g}/\text{m}^3$ (20 mg/m^3)	(A) Supplied air respirator with full facepiece, hood, or helmet or suit and operated in positive pressure mode.
(iii) Not greater than 10,000 $\mu\text{g}/\text{m}^3$ (10 mg/m^3)	(A) Powered air-purifying respirators in all inlet face coverings with high-efficiency filters. ¹ (B) Half-mask supplied air respirators operated in positive pressure mode.

Concentration of Inorganic Arsenic (as As) or Condition of Use	Required Respirator
(iv) Not greater than 500 µg/m ³	(A) Full facepiece air-purifying respirator equipped with high-efficiency filter. ¹ (B) Any full facepiece supplied air respirator. (C) Any full facepiece self-contained breathing apparatus.
(v) Not greater than 100 µg/m ³	(A) Half-mask air-purifying respirator equipped with high-efficiency filter. ¹ (B) Any half-mask supplied air respirator.

¹High-efficiency filter-99.97 pct efficiency against 0.3 micrometer monodisperse diethyl-hexyl phthalate (DOP) particles.

TABLE II
RESPIRATORY PROTECTION FOR INORGANIC ARSENICALS
(SUCH AS ARSENIC TRICHLORIDE² AND ARSENIC PHOSPHIDE)
WITH SIGNIFICANT VAPOR PRESSURE

Concentration of Inorganic Arsenic (as As) or Condition of Use	Required Respirator
(i) Unknown or greater or lesser than 20,000 µg/m ³ (20 mg/m ³) or firefighting.	(A) Any full facepiece contained breathing apparatus operated in positive pressure mode.
(ii) Not greater than 20,000 µg/m ³ (20 mg/m ³)	(A) Supplied air respirator with full facepiece hood, or helmet or suit and operated in positive pressure mode.
(iii) Not greater than 10,000 µg/m ³ (10 mg/m ³)	(A) Half-mask ² supplied air respirator operated in positive pressure mode.
(iv) Not greater than 500 µg/m ³	(A) Front or back mounted gas mask equipped with high-efficiency filter ¹ and acid gas canister. (B) Any full facepiece supplied air respirator. (C) Any full facepiece self-contained breathing apparatus.

Concentration of Inorganic Arsenic (as As) or Condition of Use	Required Respirator
(v) Not greater than 100 µg/m ³	(A) Half-mask ² air-purifying respirator equipped with high-efficiency filter ¹ and acid gas cartridge. (B) Any half-mask supplied air respirator.

¹High efficiency filter-99.97 pct efficiency against 0.3 micrometer monodisperse diethyl-hexyl phthalate (DOP) particles.

²Half-mask respirators shall not be used for protection against arsenic trichloride, as it is rapidly absorbed through the skin.

(9) **Reserved.**

(10) Protective work clothing and equipment.

(a) Provision and use. Where the possibility of skin or eye irritation from inorganic arsenic exists, and for all workers working in regulated areas, the employer shall provide at no cost to the employee and assure that employees use appropriate and clean protective work clothing and equipment such as, but not limited to:

(i) Coveralls or similar full-body work clothing;

(ii) Gloves, and shoes or coverlets;

(iii) Face shields or vented goggles when necessary to prevent eye irritation, which comply with the requirements of WAC 296-24-07801 (1) - (6).

(iv) Impervious clothing for employees subject to exposure to arsenic trichloride.

(b) Cleaning and replacement.

(i) The employer shall provide the protective clothing required in subsection (10)(a) of this section in a freshly laundered and dry condition at least weekly, and daily if the employee works in areas where exposures are over 100 µg/m³ of inorganic arsenic or in areas where more frequent washing is needed to prevent skin irritation.

(ii) The employer shall clean, launder, or dispose of protective clothing required by subsection (10)(a) of this section.

(iii) The employer shall repair or replace the protective clothing and equipment as needed to maintain their effectiveness.

(iv) The employer shall assure that all protective clothing is removed at the completion of a work shift only in change rooms prescribed in subsection (13)(a) of this section.

(v) The employer shall assure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closed container in the change-room which prevents dispersion of inorganic arsenic outside the container.

(vi) The employer shall inform in writing any person who cleans or launders clothing required by this section, of the potentially harmful effects including the carcinogenic effects of exposure to inorganic arsenic.

(vii) The employer shall assure that the containers of contaminated protective clothing and equipment in the work-

place or which are to be removed from the workplace are labeled as follows:

Caution: Clothing contaminated with inorganic arsenic; do not remove dust by blowing or shaking. Dispose of inorganic arsenic contaminated wash water in accordance with applicable local, state, or federal regulations.

(viii) The employer shall prohibit the removal of inorganic arsenic from protective clothing or equipment by blowing or shaking.

(11) Housekeeping.

(a) Surfaces. All surfaces shall be maintained as free as practicable of accumulations of inorganic arsenic.

(b) Cleaning floors. Floors and other accessible surfaces contaminated with inorganic arsenic may not be cleaned by the use of compressed air, and shoveling and brushing may be used only where vacuuming or other relevant methods have been tried and found not to be effective.

(c) Vacuuming. Where vacuuming methods are selected, the vacuums shall be used and emptied in a manner to minimize the reentry of inorganic arsenic into the workplace.

(d) Housekeeping plan. A written housekeeping and maintenance plan shall be kept which shall list appropriate frequencies for carrying out housekeeping operations, and for cleaning and maintaining dust collection equipment. The plan shall be available for inspection by the director.

(e) Maintenance of equipment. Periodic cleaning of dust collection and ventilation equipment and checks of their effectiveness shall be carried out to maintain the effectiveness of the system and a notation kept of the last check of effectiveness and cleaning or maintenance.

(12) Reserved.

(13) Hygiene facilities and practices.

(a) Change rooms. The employer shall provide for employees working in regulated areas or subject to the possibility of skin or eye irritation from inorganic arsenic, clean change rooms equipped with storage facilities for street clothes and separate storage facilities for protective clothing and equipment in accordance with WAC 296-24-12011.

(b) Showers.

(i) The employer shall assure that employees working in regulated areas or subject to the possibility of skin or eye irritation from inorganic arsenic shower at the end of the work shift.

(ii) The employer shall provide shower facilities in accordance with WAC 296-24-12009(3).

(c) Lunchrooms.

(i) The employer shall provide for employees working in regulated areas, lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees working in regulated areas.

(ii) The employer shall assure that employees working in the regulated area or subject to the possibility of skin or eye irritation from exposure to inorganic arsenic wash their hands and face prior to eating.

(d) Lavatories. The employer shall provide lavatory facilities which comply with WAC 296-24-12009 (1) and (2).

(e) Vacuuming clothes. The employer shall provide facilities for employees working in areas where exposure,

without regard to the use of respirators, exceeds $100 \mu\text{g}/\text{m}^3$ to vacuum their protective clothing and clean or change shoes worn in such areas before entering change rooms, lunchrooms or shower rooms required by subsection (10) of this section and shall assure that such employees use such facilities.

(f) Avoidance of skin irritation. The employer shall assure that no employee is exposed to skin or eye contact with arsenic trichloride, or to skin or eye contact with liquid or particulate inorganic arsenic which is likely to cause skin or eye irritation.

(14) Medical surveillance.

(a) General.

(i) Employees covered. The employer shall institute a medical surveillance program for the following employees:

(A) All employees who are or will be exposed above the action level, without regard to the use of respirators, at least thirty days per year; and

(B) All employees who have been exposed above the action level, without regard to respirator use, for thirty days or more per year for a total of ten years or more of combined employment with the employer or predecessor employers prior to or after the effective date of this standard. The determination of exposures prior to the effective date of this standard shall be based upon prior exposure records, comparison with the first measurements taken after the effective date of this standard, or comparison with records of exposures in areas with similar processes, extent of engineering controls utilized and materials used by that employer.

(ii) Examination by physician. The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee, without loss of pay and at a reasonable time and place.

(b) Initial examinations. For employees initially covered by the medical provisions of this section, or thereafter at the time of initial assignment to an area where the employee is likely to be exposed over the action level at least thirty days per year, the employer shall provide each affected employee an opportunity for a medical examination, including at least the following elements:

(i) A work history and a medical history which shall include a smoking history and the presence and degree of respiratory symptoms such as breathlessness, cough, sputum production and wheezing.

(ii) A medical examination which shall include at least the following:

(A) A 14" by 17" posterior-anterior chest x-ray and International Labor Office UICC/Cincinnati (ILO U/C) rating;

(B) A nasal and skin examination; and

(C) Other examinations which the physician believes appropriate because of the employees exposure to inorganic arsenic or because of required respirator use.

(c) Periodic examinations.

(i) The employer shall provide the examinations specified in subsection (14)(b)(i) and (ii)(A), (B) and (C) of this section at least annually for covered employees who are under forty-five years of age with fewer than ten years of

exposure over the action level without regard to respirator use.

(ii) The employer shall provide the examinations specified in subsection (14)(b)(i) and (ii)(B) and (C) of this section at least semi-annually, and the x-ray requirements specified in subsection (14)(b)(ii)(A) of this section at least annually, for other covered employees.

(iii) Whenever a covered employee has not taken the examinations specified in subsection (14)(b)(i) and (ii)(B) and (C) of this section within six months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment.

(d) Additional examinations. If the employee for any reason develops signs or symptoms commonly associated with exposure to inorganic arsenic the employer shall provide an appropriate examination and emergency medical treatment.

(e) Information provided to the physician. The employer shall provide the following information to the examining physician:

- (i) A copy of this standard and its appendices;
- (ii) A description of the affected employee's duties as they relate to the employee's exposure;
- (iii) The employee's representative exposure level or anticipated exposure level;
- (iv) A description of any personal protective equipment used or to be used; and
- (v) Information from previous medical examinations of the affected employee which is not readily available to the examining physician.

(f) Physician's written opinion.

(i) The employer shall obtain a written opinion from the examining physician which shall include:

- (A) The results of the medical examination and tests performed;
- (B) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to inorganic arsenic;
- (C) Any recommended limitations upon the employee's exposure to inorganic arsenic or upon the use of protective clothing or equipment such as respirators; and
- (D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(ii) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure.

(iii) The employer shall provide a copy of the written opinion to the affected employee.

(15) Employee information and training.

(a) Training program.

(i) The employer shall institute a training program for all employees who are subject to exposure to inorganic arsenic above the action level without regard to respirator use, or for whom there is the possibility of skin or eye irritation from inorganic arsenic. The employer shall assure that those employees participate in the training program.

(ii) The training program shall be provided for employees covered by this provision, at the time of initial assignment for those subsequently covered by this provision, and shall be repeated at least quarterly for employees who have optional use of respirators and at least annually for other covered employees thereafter, and the employer shall assure that each employee is informed of the following:

- (A) The information contained in Appendix A;
- (B) The quantity, location, manner of use, storage, sources of exposure, and the specific nature of operations which could result in exposure to inorganic arsenic as well as any necessary protective steps;
- (C) The purpose, proper use, and limitation of respirators;
- (D) The purpose and a description of medical surveillance program as required by subsection (14) of this section;
- (E) The engineering controls and work practices associated with the employee's job assignment; and
- (F) A review of this standard.

(b) Access to training materials.

(i) The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(16) Signs and labels.

(a) General.

(i) The employer may use labels or signs required by other statutes, regulations, or ordinances in addition to, or in combination with, signs and labels required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign or label required by this subsection which contradicts or detracts from the meaning of the required sign or label.

(b) Signs.

(i) The employer shall post signs demarcating regulated areas bearing the legend:

DANGER
 INORGANIC ARSENIC
 CANCER HAZARD
 AUTHORIZED PERSONNEL ONLY
 NO SMOKING OR EATING
 RESPIRATOR REQUIRED

(ii) The employer shall assure that signs required by this subsection are illuminated and cleaned as necessary so that the legend is readily visible.

(c) Labels. The employer shall apply precautionary labels to all shipping and storage containers of inorganic arsenic, and to all products containing inorganic arsenic except when the inorganic arsenic in the product is bound in such a manner so as to make unlikely the possibility of air-borne exposure to inorganic arsenic. (Possible examples of

products not requiring labels are semiconductors, light emitting diodes and glass.) The label shall bear the following legend:

DANGER
CONTAINS INORGANIC ARSENIC
CANCER HAZARD
HARMFUL IF INHALED OR
SWALLOWED
USE ONLY WITH ADEQUATE
VENTILATION
OR RESPIRATORY PROTECTION

(17) Recordkeeping.

(a) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required by subsection (5) of this section.

(ii) This record shall include:

(A) The date(s), number, duration location, and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;

(B) A description of the sampling and analytical methods used and evidence of their accuracy;

(C) The purpose, proper use, limitations, and other training requirements covering respiratory protection as required in chapter 296-62 WAC, Part E;

(D) Name, Social Security number, and job classification of the employees monitored and of all other employees whose exposure the measurement is intended to represent; and

(E) The environmental variables that could affect the measurement of the employee's exposure.

(iii) The employer shall maintain these monitoring records for at least forty years or for the duration of employment plus twenty years, whichever is longer.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by subsection (14) of this section.

(ii) This record shall include:

(A) The name, Social Security number, and description of duties of the employee;

(B) A copy of the physician's written opinions;

(C) Results of any exposure monitoring done for that employee and the representative exposure levels supplied to the physician; and

(D) Any employee medical complaints related to exposure to inorganic arsenic.

(iii) The employer shall in addition keep, or assure that the examining physician keeps, the following medical records:

(A) A copy of the medical examination results including medical and work history required under subsection (14) of this section;

(B) A description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information;

(C) The initial x-ray;

(D) The x-rays for the most recent five years; and

(E) Any x-rays with a demonstrated abnormality and all subsequent x-rays.

(iv) The employer shall maintain or assure that the physician maintains those medical records for at least forty years, or for the duration of employment, plus twenty years, whichever is longer.

(c) Availability.

(i) The employer shall make available upon request all records required to be maintained by subsection (17) of this section to the director for examination and copying.

(ii) Records required by this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with WAC 296-62-05201 through 296-62-05209 and 296-62-05213 through 296-62-05217.

(iii) The employer shall make available upon request an employee's medical records and exposure records representative of that employee's exposure required to be maintained by subsection (17) of this section to the affected employee or former employee or to a physician designated by the affected employee or former employee.

(d) Transfer of records.

(i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section.

(ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records required to be maintained by this section for the prescribed period, these records shall be transmitted to the director.

(iii) At the expiration of the retention period for the records required to be maintained by this section, the employer shall notify the director at least three months prior to the disposal of such records and shall transmit those records to the director if he requests them within that period.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in WAC 296-62-05215.

(18) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to inorganic arsenic conducted pursuant to subsection (5) of this section.

(b) Observation procedures.

(i) Whenever observation of the monitoring of employee exposure to inorganic arsenic requires entry into an area where the use of respirators, protective clothing, or equipment is required, the employer shall provide the observer with and assure the use of such respirators, clothing, and such equipment, and shall require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the monitoring, observers shall be entitled to;

(A) Receive an explanation of the measurement procedures;

(B) Observe all steps related to the monitoring of inorganic arsenic performed at the place of exposure; and

(C) Record the results obtained or receive copies of the results when returned by the laboratory.

(19) Appendices. The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-094, § 296-62-07347, filed 8/17/99, effective 12/1/99; 99-10-071, § 296-62-07347, filed 5/4/99, effective 9/1/99; 98-02-030, § 296-62-07347, filed 12/31/97, effective 1/31/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07347, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-18-029 (Order 81-21), § 296-62-07347, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07347, filed 7/27/81; 79-08-115 (Order 79-9), § 296-62-07347, filed 7/31/79; 79-02-037 (Order 79-1), § 296-62-07347, filed 1/23/79.]

WAC 296-62-07354 Appendices—Inorganic arsenic.

The information in Appendices A, B, and C is not intended, by itself, to create any additional obligations not otherwise imposed by WAC 296-62-07347 nor detract from existing obligation.

(1) Appendix A—Inorganic arsenic substance information sheet.

(a) Substance identification.

(i) Substance. Inorganic arsenic.

(ii) Definition. Copper acetoarsenite, arsenic and all inorganic compounds containing arsenic except arsine, measured as arsenic (As).

(iii) Permissible exposure limit. Ten micrograms per cubic meter of air as determined as an average over an 8 hour period. No employee may be exposed to any skin or eye contact with arsenic trichloride or to skin or eye contact likely to cause skin or eye irritation.

(iv) Regulated areas. Only employees authorized by your employer should enter a regulated area.

(b) Health hazard data.

(i) Comments. The health hazard of inorganic arsenic is high.

(ii) Ways in which the chemical affects your body. Exposure to airborne concentrations of inorganic arsenic may cause lung cancer, and can be a skin irritant. Inorganic arsenic may also affect your body if swallowed. One compound in particular, arsenic trichloride, is especially dangerous because it can be absorbed readily through the skin. Because inorganic arsenic is a poison, you should wash your hands thoroughly prior to eating or smoking.

(c) Personal protective equipment and clothing.

(i) Respirators. Respirators will be provided by the employer at no cost to employees for routine use if the employer is in the process of implementing engineering and work practice controls or where engineering and work practice controls are not feasible or insufficient. Respirators must be worn for nonroutine activities or in emergency situations where there is likely to be exposure to levels of inorganic arsenic in excess of the permissible exposure limit. Since how well the respirator fits is very important, the employer is required to conduct fit tests to make sure the respirator seals

properly when worn. These tests are simple and rapid and will be explained during training sessions.

(ii) Protective clothing. If work is in a regulated area, the employer is required to provide at no cost to employees, and it must be worn, appropriate, clean, protective clothing and equipment. The purpose of this equipment is to prevent the employee from taking home arsenic-contaminated dust and to protect the body from repeated skin contact with inorganic arsenic likely to cause skin irritation. This clothing shall include such items as coveralls or similar full-body clothing, gloves, shoes or coverlets, and aprons. Protective equipment should include face shields or vented goggles, where eye irritation may occur.

(d) Hygiene facilities and practices.

(i) The employer shall ensure that employees do not eat, drink, smoke, chew gum or tobacco, or apply cosmetics in the regulated area, except that drinking water is permitted. If work is in a regulated area, the employer is required to provide lunchrooms or other areas for these purposes.

(ii) If work is in a regulated area, the employer is required to provide showers, washing facilities, and change rooms. The employer shall ensure that employees wash faces and hands before eating and shower at the end of the work shift. Do not take used protective clothing out of change rooms without the employer's permission. The employer is required to provide for laundering or cleaning of the protective clothing.

(e) Signs and labels. The employer is required to post warning signs and labels for employee protection. Signs must be posted in regulated areas. The signs must warn that a cancer hazard is present, that only authorized employees may enter the area, and that no smoking or eating is allowed, and that respirators must be worn.

(f) Medical examinations. If exposure to arsenic is over the action level ($5 \mu\text{g}/\text{m}^3$) (including all persons working in regulated areas) at least 30 days per year, or employees have been exposed to arsenic for more than 10 years over the action level, the employer is required to provide employees with a medical examination. The examination shall be every 6 months for employees over 45 years old or with more than 10 years exposure over the action level and annually for other covered employees. The medical examination must include a medical history; a chest x-ray (annual requirement only); skin examination; and nasal examination. The examining physician will provide a written opinion to the employer containing the results of the medical exams. Employees should also receive a copy of this opinion. The physician must not tell the employer any conditions he detects unrelated to occupational exposure to arsenic but must tell employees those conditions.

(g) Observation of monitoring. The employer is required to monitor employee exposure to arsenic and employees or their representatives are entitled to observe the monitoring procedure. Employees are entitled to receive an explanation of the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, employees must also be provided with and must wear the protective clothing and equipment.

(h) Access to records. Employees or their representatives are entitled to records of employee exposure to inorganic arsenic upon request to the employer. Employee medical examination records can be furnished to employees' physician if employees request the employer to provide them.

(i) Training and notification. Additional information on all of these items plus training as to hazards of exposure to inorganic arsenic and the engineering and work practice controls associated with employees' jobs will also be provided by the employer. If employees are exposed over the permissible exposure limit, the employer must inform employees of that fact and the actions to be taken to reduce employee exposure.

(2) Appendix B—Substance technical guidelines. Arsenic, arsenic trioxide, arsenic trichloride (3 examples)

(a) Physical and chemical properties

(i) Arsenic (metal)

(A) Formula: As

(B) Appearance: Gray metal

(C) Melting point: Sublimes without melting at 613C

(D) Specific gravity: ($H_2O=1$):5.73.

(E) Solubility in water: Insoluble

(ii) Arsenic trioxide

(A) Formula: As_2O_3 , (As_4O_6).

(B) Appearance: White powder

(C) Melting point: 315C

(D) Specific gravity: ($H_2O=1$):3.74

(E) Solubility in water: 3.7 grams in 100cc of water at

20C

(iii) Arsenic trichloride (liquid)(Trichloride)

(A) Formula: $AsCl_3$

(B) Appearance: Colorless or pale yellow liquid

(C) Melting point: -8.5C

(D) Boiling point: 130.2C

(E) Specific gravity ($1120=1$):2:16 at 20C

(F) Vapor Pressure: 10mm Hg at 23.5C.

(G) Solubility in water: Decomposes in water.

(b) Fire, explosion, and reactivity data.

(i) Fire: Arsenic trioxide and arsenic trichloride are non-flammable.

(ii) Reactivity:

(A) Conditions contributing to instability: Heat.

(B) Incompatibility: Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.

(c) Monitoring and measurement procedures.

(i) Samples collected should be full shift (at least 7 hours) samples. Sampling should be done using a personal sampling pump at a flow rate of 2 liters per minute. Samples should be collected on 0.8 micrometer pore size membrane filter (37mm diameter). Volatile arsenicals such as arsenic trichloride can be most easily collected in a midget bubbler filled with 15 ml. of 0.1 N NaOH.

(ii) The method of sampling and analysis should have an accuracy of not less than ± 25 percent (with a confidence limit of 95 percent) for 10 micrograms per cubic meter of air ($10 \mu g/m^3$) and ± 35 percent (with a confidence limit of 95 percent) for concentrations of inorganic arsenic between 5 and $10 \mu g/m^3$.

(3) Appendix C—Medical surveillance guidelines.

(a) General.

(i) Medical examinations are to be provided for all employees exposed to levels of inorganic arsenic above the action level ($5 \mu g/m^3$) for at least 30 days per year (which would include among others, all employees, who work in regulated areas). Examinations are also to be provided to all employees who have had 10 years or more exposure above the action level for more than 30 days per year while working for the present or predecessor employer though they may no longer be exposed above the level.

(ii) An initial medical examination is to be provided to all such employees by December 1, 1978. In addition, an initial medical examination is to be provided to all employees who are first assigned to areas in which worker exposure will probably exceed $5 \mu g/m^3$ (after the effective date of this standard) at the time of initial assignment. In addition to its immediate diagnostic usefulness the initial examination will provide a baseline for comparing future test results. The initial examination must include as a minimum the following elements:

(A) A work and medical history, including a smoking history, and presence and degree of respiratory symptoms such as breathlessness, cough, sputum production, and wheezing;

(B) A 14-inch by 17-inch posterior-anterior chest x-ray and an International Labor Office UICC/Cincinnati (ILO U/C) rating;

(C) A nasal and skin examination; and

(D) Other examinations which the physician believes appropriate because of the employee's exposure to inorganic arsenic or because of required respirator use.

(iii) Periodic examinations are also to be provided to the employees listed above. The periodic examinations shall be given annually for those covered employees 45 years of age or less with fewer than 10 years employment in areas where employee exposure exceeds the action level ($5 \mu g/m^3$). Periodic examinations need not include sputum cytology and only an updated medical history is required.

(iv) Periodic examinations for other covered employees, shall be provided every 6 months. These examinations shall include all tests required in the initial examination, except that the medical history need only be updated.

(v) The examination contents are minimum requirements. Additional tests such as lateral and oblique x-rays or pulmonary function tests may be useful. For workers exposed to 3 arsenicals, copper acetoarsenite, potassium arsenite, or sodium arsenite, which are associated with lymphatic cancer, the examination should also include palpation of superficial lymph nodes and complete blood count.

(b) Noncarcinogenic effects.

(i) The WISHA standard is based on minimizing risk of exposed workers dying of lung cancer from exposure to inorganic arsenic. It will also minimize skin cancer from such exposures.

(ii) The following three sections quoted from "Occupational Diseases: A Guide to Their Recognition," Revised Edition, June 1977, National Institute for Occupational Safety and Health is included to provide information on the nonneoplastic effects of exposure to inorganic arsenic. Such effects should not occur if the WISHA standards are followed.

(A) Local—Trivalent arsenic compounds are corrosive to the skin. Brief contact has no effect but prolonged contact results in a local hyperemia and later vesicular or pustular eruption. The moist mucous membranes are most sensitive to the irritant action. Conjunctiva, moist and macerated areas of skin, the eyelids, the angles of the ears, nose, mouth, and respiratory mucosa are also vulnerable to the irritant effects. The wrists are common sites of dermatitis, as are the genitalia if personal hygiene is poor. Perforations of the nasal septum may occur. Arsenic trioxide and pentoxide are capable of producing skin sensitization and contact dermatitis. Arsenic is also capable of producing keratoses, especially of the palms and soles.

(B) Systemic.

(I) The acute toxic effects of arsenic are generally seen following ingestion of inorganic arsenical compounds. This rarely occurs in an industrial setting. Symptoms develop within 1/2 to 4 hours following ingestion and are usually characterized by constriction of the throat followed by dysphagia, epigastric pain, vomiting, and watery diarrhea. Blood may appear in vomitus and stools. If the amount ingested is sufficiently high, shock may develop due to severe fluid loss, and death may ensue in 24 hours. If the acute effects are survived, exfoliative dermatitis and peripheral neuritis may develop.

(II) Cases of acute arsenical poisoning due to inhalation are exceedingly rare in industry. When it does occur, respiratory tract symptoms - cough, chest pain, dyspnea - giddiness, headache, and extreme general weakness precede gastrointestinal symptoms. The acute toxic symptoms of trivalent arsenical poisoning are due to severe inflammation of the mucous membranes and greatly increased permeability of the blood capillaries.

(III) Chronic arsenical poisoning due to ingestion is rare and generally confined to patients taking prescribed medications. However, it can be a concomitant of inhaled inorganic arsenic from swallowed sputum and improper eating habits. Symptoms are weight loss, nausea and diarrhea alternating with constipation, pigmentation and eruption of the skin, loss of hair, and peripheral neuritis. Chronic hepatitis and cirrhosis have been described. Polyneuritis may be the salient feature, but more frequently there are numbness and parasthenias of "glove and stocking" distribution. The skin lesions are usually melanotic and keratotic and may occasionally take the form of an intradermal cancer of the squamous cell type, but without infiltrative properties. Horizontal white lines (striations) on the fingernails and toenails are commonly seen in chronic arsenical poisoning and are considered to be a diagnostic accompaniment of arsenical polyneuritis.

(IV) Inhalation of inorganic arsenic compounds is the most common cause of chronic poisoning in the industrial situation. This condition is divided into three phases based on signs and symptoms.

(V) First phase: The worker complains of weakness, loss of appetite, some nausea, occasional vomiting, a sense of heaviness in the stomach, and some diarrhea.

(VI) Second phase: The worker complains of conjunctivitis, a catarrhal state of the mucous membranes of the nose, larynx, and respiratory passage. Coryza, hoarseness, and mild tracheobronchitis may occur. Perforation of the nasal septum

is common, and is probably the most typical lesion of the upper respiratory tract in occupational exposure to arsenical dust. Skin lesions, eczematoid and allergic in type, are common.

(VII) Third phase: The worker complains of symptoms of peripheral neuritis, initially of hands and feet, which is essentially sensory. In more severe cases, motor paralysis occur; the first muscles affected are usually the toe extensors and the peronei. In only the most severe cases will paralysis of flexor muscles of the feet or of the extensor muscles of hands occur.

(VIII) Liver damage from chronic arsenical poisoning is still debated, and as yet the question is unanswered. In cases of chronic and acute arsenical poisoning, toxic effects to the myocardium have been reported based on EKG changes. These findings, however, are now largely discounted and the EKG changes are ascribed to electrolyte disturbances concomitant with arsenicalism. Inhalation of arsenic trioxide and other inorganic arsenical dusts does not give rise to radiological evidence or pneumoconiosis. Arsenic does have a depressant effect upon the bone marrow, with disturbances of both erythropoiesis and myelopoiesis.

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[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-07354, filed 8/17/99, effective 12/1/99; 98-02-030, § 296-62-07354, filed 12/31/97, effective 1/31/98. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-07354, filed 10/1/90, effective 11/15/90.]

WAC 296-62-07367 Respiratory protection and personal protective equipment. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of WAC 296-62-07355 through 296-62-07389. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations, such as maintenance and repair activities, vessel cleaning, or other activities, for which engineering and work-practice controls are not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the TWA or excursion limit;

(d) Emergencies.

(2) Respirator program. The employer must establish, implement, and maintain a respiratory protection program as required in chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(3) Respirator selection. The employer must select the appropriate respirator from Table 1 of this section.

Table 1.—Minimum Requirements for Respiratory Protection for Airborne EtO

Condition of use or concentration of airborne EtO (ppm)	Minimum required respirator
Equal to or less than 50	(a) Full facepiece respirator with EtO approved canister, front-or back-mounted.
Equal to or less than 2,000	(a) Positive-pressure supplied air respirator, equipped with full facepiece, hood or helmet, or (b) Continuous-flow supplied air respirator (positive pressure) equipped with hood, helmet or suit.
Concentration above 2,000 or unknown concentration (such as in emergencies)	(a) Positive-pressure self-contained breathing apparatus (SCBA), equipped with full facepiece, or (b) Positive-pressure full facepiece supplied air respirator equipped with an auxiliary positive-pressure self-contained breathing apparatus.
Firefighting	(a) Positive pressure self-contained breathing apparatus equipped with full facepiece.
Escape	(a) Any respirator described above.

Note: Respirators approved for use in higher concentrations are permitted to be used in lower concentrations.

(4) Protective clothing and equipment. Where employees could have eye or skin contact with EtO or EtO solutions, the employer must select and provide, at no cost to the employee, appropriate protective clothing or other equipment in accordance with chapter 296-24 WAC, Part A-2, and to protect any area of the body that may come in contact with liquid EtO or EtO in solution, and must ensure that the employee wears the protective clothing and equipment provided.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07367, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-62-07367, filed 9/30/94, effective 11/20/94; 88-23-054 (Order 88-25), § 296-62-07367, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07367, filed 11/30/87.]

WAC 296-62-07369 Emergency situations. (1) Written plan.

(a) A written plan for emergency situations shall be developed for each workplace where there is a possibility of an emergency. Appropriate portions of the plan shall be implemented in the event of an emergency.

(b) The plan shall specifically provide that employees engaged in correcting emergency conditions shall be equipped with respiratory protection as required by WAC 296-62-07367 until the emergency is abated.

(c) The plan shall include the elements prescribed in WAC 296-24-567, "Employee emergency plans and fire prevention plans."

(2) Alerting employees. Where there is the possibility of employee exposure to EtO due to an emergency, means shall be developed to alert potentially affected employees of such occurrences promptly. Affected employees shall be immediately evacuated from the area in the event that an emergency occurs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07369, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07369, filed 11/30/87.]

WAC 296-62-07379 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07383 Appendix A—Substance safety data sheet for ethylene oxide (nonmandatory). (1) **Substance identification**

(a) Substance: Ethylene oxide (C₂H₄O).

(b) Synonyms: Dihydrooxirene, dimethylene oxide, EO, 1,2-epoxyethane, EtO, ETO, oxacyclopropane, oxane, oxidoethane, alpha/beta-oxidoethane, oxiran, oxirane.

(c) Ethylene oxide can be found as a liquid or vapor.

(d) EtO is used in the manufacture of ethylene glycol, surfactants, ethanolamines, glycol ethers, and other organic chemicals. EtO is also used as a sterilant and fumigant.

(e) Appearance and odor: Colorless liquid below 10.7°C (51.3°F) or colorless gas with ether-like odor detected at approximately 700 parts EtO per million parts of air (700 ppm).

(f) Permissible exposure: Exposure may not exceed 1 part EtO per million parts of air averaged over the 8-hour work day.

(2) **Health hazard data**

(a) Ethylene oxide can cause bodily harm if you inhale the vapor, if it comes into contact with your eyes or skin, or if you swallow it.

(b) Effects of overexposure:

(i) Ethylene oxide in liquid form can cause eye irritation and injury to the cornea, frostbite, and severe irritation and blistering of the skin upon prolonged or confined contact. Ingestion of EtO can cause gastric irritation and liver injury. Acute effects from inhalation of EtO vapors include respiratory irritation and lung injury, headache, nausea, vomiting, diarrhea, shortness of breath, and cyanosis (blue or purple coloring of skin). Exposure has also been associated with the occurrence of cancer, reproductive effects, mutagenic changes, neurotoxicity, and sensitization.

(ii) EtO has been shown to cause cancer in laboratory animals and has been associated with higher incidences of

cancer in humans. Adverse reproductive effects and chromosome damage may also occur from EtO exposure.

(c) Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms and suspect that they are caused by exposure to EtO.

(3) Emergency first aid procedures

(a) Eye exposure: If EtO gets into your eyes, wash your eyes immediately with large amounts of water, lifting the lower and upper eyelids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical.

(b) Skin exposure: If EtO gets on your skin, immediately wash the contaminated skin with water. If EtO soaks through your clothing, especially your shoes, remove the clothing immediately and wash the skin with water using an emergency deluge shower. Get medical attention immediately. Thoroughly wash contaminated clothing before reusing. Contaminated leather shoes or other leather articles should not be reused and should be discarded.

(c) Inhalation: If large amounts of EtO are inhaled, the exposed person must be moved to fresh air at once. If breathing has stopped, perform cardiopulmonary resuscitation. Keep the affected person warm and at rest. Get medical attention immediately.

(d) Swallowing: When EtO has been swallowed, give the person large quantities of water immediately. After the water has been swallowed, try to get the person to vomit by having him or her touch the back of the throat with his or her finger. Do not make an unconscious person vomit. Get medical attention immediately.

(e) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, attempt rescue only after notifying at least one other person of the emergency and putting into effect established emergency procedures. Do not become a casualty yourself. Understand your emergency rescue procedures and know the location of the emergency equipment before the need arises.

(4) Respirators and protective clothing

(a) Respirators:

(i) You may be required to wear a respirator for nonroutine activities, in emergencies, while your employer is in the process of reducing EtO exposure through engineering controls, and in areas where engineering controls are not feasible. Only air supplied positive-pressure, full-facepiece respirators are approved for protection against EtO. If air-purifying respirators are worn in the future, they must have a label issued by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with ethylene oxide. For effective protection, respirators must fit your face and head snugly. Respirators must not be loosened or removed in work situations where their use is required.

(ii) EtO does not have a detectable odor except at levels well above the permissible exposure limits. If you can smell EtO while wearing a respirator, proceed immediately to fresh air. If you experience difficulty breathing while wearing a respirator, tell your employer.

(b) Protective clothing:

(i) You may be required to wear impermeable clothing, gloves, a face shield, or other appropriate protective clothing

to prevent skin contact with liquid EtO or EtO-containing solutions. Where protective clothing is required, your employer must provide clean garments to you as necessary to assure that the clothing protects you adequately.

(ii) Replace or repair protective clothing that has become torn or otherwise damaged.

(iii) EtO must never be allowed to remain on the skin. Clothing and shoes which are not impermeable to EtO should not be allowed to become contaminated with EtO, and if they do, the clothing should be promptly removed and decontaminated. Contaminated leather shoes should be discarded. Once EtO penetrates shoes or other leather articles, they should not be worn again.

(c) Eye protection: You must wear splashproof safety goggles in areas where liquid EtO or EtO-containing solutions may contact your eyes. In addition, contact lenses should not be worn in areas where eye contact with EtO can occur.

(5) Precautions for safe use, handling, and storage

(a) EtO is a flammable liquid, and its vapors can easily form explosive mixtures in air.

(b) EtO must be stored in tightly closed containers in a cool, well-ventilated area, away from heat, sparks, flames, strong oxidizers, alkalines, and acids, strong bases, acetylide forming metals such as copper, silver, mercury and their alloys.

(c) Sources of ignition such as smoking material, open flames and some electrical devices are prohibited wherever EtO is handled, used, or stored in a manner that could create a potential fire or explosion hazard.

(d) You should use nonsparking tools when opening or closing metal containers of EtO, and containers must be bonded and grounded in the rare instances in which liquid EtO is poured or transferred.

(e) Impermeable clothing wet with liquid EtO or EtO-containing solutions may be easily ignited. If you are wearing impermeable clothing and are splashed with liquid EtO or EtO-containing solution, you should immediately remove the clothing while under an emergency deluge shower.

(f) If your skin comes into contact with liquid EtO or EtO-containing solutions, you should immediately remove the EtO using an emergency deluge shower.

(g) You should not keep food, beverages, or smoking materials in regulated areas where employee exposures are above the permissible exposure limits.

(h) Fire extinguishers and emergency deluge showers for quick drenching should be readily available, and you should know where they are and how to operate them.

(i) Ask your supervisor where EtO is used in your work area and for any additional plant safety and health rules.

(6) Access to information

(a) Each year, your employer is required to inform you of the information contained in this standard and appendices for EtO. In addition, your employer must instruct you in the proper work practices for using EtO emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to EtO. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of

your exposure. If your employer determines that you are being overexposed, he or she is required to inform you of the actions which are being taken to reduce your exposure to within permissible exposure limits.

(c) Your employer is required to keep records of your exposures and medical examinations. These exposure records must be kept by the employer for at least thirty years. Medical records must be kept for the period of your employment plus thirty years.

(d) Your employer is required to release your exposure and medical records to your physician or designated representative upon your written request.

(7) Sterilant use of EtO in hospitals and health care facilities.

(a) This section of Appendix A, for informational purposes, sets forth EPA's recommendations for modifications in workplace design and practice in hospitals and health care facilities for which the Environmental Protection Agency has registered EtO for uses as a sterilant or fumigant under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136 *et seq.* These new recommendations, published in the **Federal Register** by EPA at 49 FR 15268, as modified in today's **Register**, are intended to help reduce the exposure of hospital and health care workers to EtO to 1 ppm. EPA's recommended workplace design and workplace practice are as follows:

(i) Workplace design

(A) Installation of gas line hand valves. Hand valves must be installed on the gas supply line at the connection to the supply cylinders to minimize leakage during cylinder change.

(B) Installation of capture boxes. Sterilizer operations result in a gas/water discharge at the completion of the process. This discharge is routinely piped to a floor drain which is generally located in an equipment or an adjacent room. When the floor drain is not in the same room as the sterilizer and workers are not normally present, all that is necessary is that the room be well ventilated.

(C) The installation of a "capture box" will be required for those work place layouts where the floor drain is located in the same room as the sterilizer or in a room where workers are normally present. A "capture box" is a piece of equipment that totally encloses the floor drain where the discharge from the sterilizer is pumped. The "capture box" is to be vented directly to a nonrecirculating or dedicated ventilation system. Sufficient air intake should be allowed at the bottom of the box to handle the volume of air that is ventilated from the top of the box. The "capture box" can be made of metal, plastic, wood or other equivalent material. The box is intended to reduce levels of EtO discharged into the work room atmosphere. The use of a "capture box" is not required if: (I) The vacuum pump discharge floor drain is located in a well ventilated equipment or other room where workers are not normally present or (II) the water sealed vacuum pump discharges directly to a closed sealed sewer line (check local plumbing codes).

(D) If it is impractical to install a vented "capture box" and a well ventilated equipment or other room is not feasible, a box that can be sealed over the floor drain may be used if: (I) The floor drain is located in a room where workers are not

normally present and EtO cannot leak into an occupied area, and (II) the sterilizer in use is less than 12 cubic feet in capacity (check local plumbing codes).

(ii) Ventilation of aeration units.

(A) Existing aeration units. Existing units must be vented to a nonrecirculating or dedicated system or vented to an equipment or other room where workers are not normally present and which is well ventilated. Aerator units must be positioned as close as possible to the sterilizer to minimize the exposure from the off-gassing of sterilized items.

(B) Installation of new aerator units (where none exist). New aerator units must be vented as described above for existing aerators. Aerators must be in place by July 1, 1986.

(iii) Ventilation during cylinder change. Workers may be exposed to short but relatively high levels of EtO during the change of gas cylinders. To reduce exposure from this route, users must select one of three alternatives designed to draw off gas that may be released when the line from the sterilizer to the cylinder is disconnected:

(A) Location of cylinders in a well ventilated equipment room or other room where workers are not normally present.

(B) Installation of a flexible hose (at least four inches in diameter) to a nonrecirculating or dedicated ventilation system and located in the area of cylinder change in such a way that the hose can be positioned at the point where the sterilizer gas line is disconnected from the cylinder.

(C) Installation of a hood that is part of a nonrecirculating or dedicated system and positioned no more than one foot above the point where the change of cylinders takes place.

(iv) Ventilation of sterilizer door area. One of the major sources of exposure to EtO occurs when the sterilizer door is opened following the completion of the sterilization process. In order to reduce this avenue of exposure, a hood or metal canopy closed on each end must be installed over the sterilizer door. The hood or metal canopy must be connected to a nonrecirculating or dedicated ventilation system or one that exhausts gases to a well ventilated equipment or other room where workers are not normally present. A hood or canopy over the sterilizer door is required for use even with those sterilizers that have a purge cycle and must be in place by July 1, 1986.

(v) Ventilation of sterilizer relief valve. Sterilizers are typically equipped with a safety relief device to release gas in case of increased pressure in the sterilizer. Generally, such relief devices are used on pressure vessels. Although these pressure relief devices are rarely opened for hospital and health care sterilizers, it is suggested that they be designed to exhaust vapor from the sterilizer by one of the following methods:

(A) Through a pipe connected to the outlet of the relief valve ventilated directly outdoors at a point high enough to be away from passers by, and not near any windows that open, or near any air conditioning or ventilation air intakes.

(B) Through a connection to an existing or new nonrecirculating or dedicated ventilation system.

(C) Through a connection to a well ventilated equipment or other room where workers are not normally present.

(vi) Ventilation systems. Each hospital and health care facility affected by this notice that uses EtO for the steriliza-

tion of equipment and supplies must have a ventilation system which enables compliance with the requirements of (a)(i)(B) through (v) of this subsection in the manner described in these sections and within the timeframes allowed. Thus, each affected hospital and health care facility must have or install a nonrecirculating or dedicated ventilation equipment or other room where workers are not normally present in which to vent EtO.

(vii) Installation of alarm systems. An audible and visual indicator alarm system must be installed to alert personnel of ventilation system failures, i.e., when the ventilation fan motor is not working.

(b) Workplace practices

(i) All the workplace practices discussed in this unit must be permanently posted near the door of each sterilizer prior to use by any operator.

(ii) Changing of supply line filters.

Filters in the sterilizer liquid line must be changed when necessary, by the following procedure:

(A) Close the cylinder valve and the hose valve.

(B) Disconnect the cylinder hose (piping) from the cylinder.

(C) Open the hose valve and bleed slowly into a proper ventilating system at or near the in-use supply cylinders.

(D) Vacate the area until the line is empty.

(E) Change the filter.

(F) Reconnect the lines and reverse the valve position.

(G) Check hoses, filters, and valves for leaks with a fluorocarbon leak detector (for those sterilizers using the eighty-eight percent chlorofluorocarbon, twelve percent ethylene oxide mixture (12/88)).

(iii) Restricted access area.

(A) Areas involving use of EtO must be designated as restricted access areas. They must be identified with signs or floor marks near the sterilizer door, aerator, vacuum pump floor drain discharge, and in-use cylinder storage.

(B) All personnel must be excluded from the restricted area when certain operations are in progress, such as discharging a vacuum pump, emptying a sterilizer liquid line, or venting a nonpurge sterilizer with the door ajar or other operations where EtO might be released directly into the face of workers.

(iv) Door opening procedures.

(A) Sterilizers with purge cycles. A load treated in a sterilizer equipped with a purge cycle should be removed immediately upon completion of the cycle (provided no time is lost opening the door after cycle is completed). If this is not done, the purge cycle should be repeated before opening door.

(B) Sterilizers without purge cycles. For a load treated in a sterilizer not equipped with a purge cycle, the sterilizer door must be ajar six inches for fifteen minutes, and then fully opened for at least another fifteen minutes before removing the treated load. The length of time of the second period should be established by peak monitoring for one hour after the two fifteen-minute periods suggested. If the level is above 10 ppm time-weighted average for eight hours, more time should be added to the second waiting period (door wide open). However, in no case may the second period be shortened to less than fifteen minutes.

(v) Chamber unloading procedures.

(A) Procedures for unloading the chamber must include the use of baskets or rolling carts, or baskets and rolling tables to transfer treated loads quickly, thus avoiding excessive contact with treated articles, and reducing the duration of exposures.

(B) If rolling carts are used, they should be pulled not pushed by the sterilizer operators to avoid offgassing exposure.

(vi) Maintenance. A written log should be instituted and maintained documenting the date of each leak detection and any maintenance procedures undertaken. This is a suggested use practice and is not required.

(vii) Leak detection. Sterilizer door gaskets, cylinder and vacuum piping, hoses, filters, and valves must be checked for leaks under full pressure with a Fluorocarbon leak detector (for 12/88 systems only) every two weeks by maintenance personnel. Also, the cylinder piping connections must be checked after changing cylinders. Particular attention in leak detection should be given to the automatic solenoid valves that control the flow of EtO to the sterilizer. Specifically, a check should be made at the EtO gasline entrance port to the sterilizer, while the sterilizer door is open and the solenoid valves are in a closed position.

(viii) Maintenance procedures. Sterilizer/aerator door gaskets, valves, and fittings must be replaced when necessary as determined by maintenance personnel in their biweekly checks; in addition, visual inspection of the door gaskets for cracks, debris, and other foreign substances should be conducted daily by the operator.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07383, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-07383, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-07383, filed 11/30/87.]

WAC 296-62-07413 Respirator protection. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls when employee exposure levels exceed the PEL;

(b) Maintenance and repair activities, and brief or intermittent operations, where employee exposures exceed the PEL and engineering and work-practice controls are not feasible or are not required;

(c) Activities in regulated areas as specified in WAC 296-62-07409;

(d) Work operations for which the employer has implemented all feasible engineering and work-practice controls and such controls are not sufficient to reduce employee exposures to or below the PEL;

(e) Work operations for which an employee who is exposed to cadmium at or above the action level, and the employee requests a respirator;

(f) Work operations for which an employee is exposed above the PEL and engineering controls are not required by WAC 296-62-07411 (1)(b); and

(g) Emergencies.

(2) Respirator program.

(a) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(b) No employees must use a respirator if, based on their recent medical examination, the examining physician determines that they will be unable to continue to function normally while using a respirator. If the physician determines that the employee must be limited in, or removed from, their current job because of their inability to use a respirator, the limitation or removal must be in accordance with WAC 296-62-07423 (11) and (12).

(c) If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination as required by WAC 296-62-07423 (6)(b) to determine if the employee can use a respirator while performing the required duties.

(3) Respirator selection.

(a) The employer must select the appropriate respirator from Table 2 of this section.

Table 2.—Respiratory Protection for Cadmium

Airborne concentration or condition of use ^a	Required respirator type ^b
10 x or less	A half mask, air-purifying respirator equipped with a HEPA ^c filter ^d .
25 x or less	A powered air-purifying respirator ("PAPR") with a loose-fitting hood or helmet equipped with a HEPA filter, or a supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous flow mode.
50 x or less	A full facepiece air-purifying respirator equipped with a HEPA filter, or a powered air-purifying respirator with a tight-fitting half mask equipped with a HEPA filter, or a supplied air respirator with a tight-fitting half mask operated in the continuous flow mode.
250 x or less	A powered air-purifying respirator with a tight-fitting full facepiece equipped with a HEPA filter, or a supplied-air respirator with a tight-fitting full facepiece operated in the continuous flow mode.
1000 x or less	A supplied-air respirator with half mask or full facepiece operated in the pressure demand or other positive pressure mode.

Table 2.—Respiratory Protection for Cadmium

>1000 x or unknown concentrations	A self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode, or a supplied-air respirator with a full facepiece operated in the pressure demand or other positive pressure mode and equipped with an auxiliary escape type self-contained breathing apparatus operated in the pressure demand mode.
Fire fighting	A self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

^a Concentrations expressed as multiple of the PEL.

^b Respirators assigned for higher environmental concentrations may be used at lower exposure levels. Quantitative fit testing is required for all tight-fitting air purifying respirators where airborne concentration of cadmium exceeds 10 times the TWA PEL ($10 \times 5 \mu\text{g}/\text{m}^3 = 50 \mu\text{g}/\text{m}^3$). A full facepiece respirator is required when eye irritation is experienced.

^c HEPA means High Efficiency Particulate Air.

^d Fit testing, qualitative or quantitative, is required.

SOURCE: Respiratory Decision Logic, NIOSH, 1987

(b) The employer must provide an employee with a powered, air-purifying respirator (PAPR) instead of a negative-pressure respirator when an employee who is entitled to a respirator chooses to use this type of respirator and such a respirator provides adequate protection to the employee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07413, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07413, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07413, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07425 Communication of cadmium hazards to employees. (1) General. In communications concerning cadmium hazards, employers shall comply with the requirements of WISHA's Hazard Communication Standard, chapter 296-62 WAC, Part C, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training. In addition, employers shall comply with the following requirements:

(2) Warning signs.

(a) Warning signs shall be provided and displayed in regulated areas. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

(b) Warning signs required by (a) of this subsection shall bear the following information:

DANGER CADMIUM CANCAER HAZARD CAN CAUSE LUNG
AND KIDNEY DISEASE AUTHORIZED PERSONNEL ONLY
RESPIRATORS REQUIRED IN THIS AREA

(c) The employer shall assure that signs required by this subsection are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.

(3) Warning labels.

(a) Shipping and storage containers containing cadmium, cadmium compounds, or cadmium contaminated clothing, equipment, waste, scrap, or debris shall bear appropriate warning labels, as specified in (b) of this subsection.

(b) The warning labels shall include at least the following information:

DANGER CONTAINS CADMIUM CANCAER HAZARD AVOID
CREATING DUST CAN CAUSE LUNG AND KIDNEY DISEASE

(c) Where feasible, installed cadmium products shall have a visible label or other indication that cadmium is present.

(4) Employee information and training.

(a) The employer shall institute a training program for all employees who are potentially exposed to cadmium, assure employee participation in the program, and maintain a record of the contents of such program.

(b) Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

(c) The employer shall make the training program understandable to the employee and shall assure that each employee is informed of the following:

(i) The health hazards associated with cadmium exposure, with special attention to the information incorporated in WAC 296-62-07441, Appendix A;

(ii) The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the PEL;

(iii) The engineering controls and work practices associated with the employee's job assignment;

(iv) The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect employees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;

(v) The purpose, proper selection, fitting, proper use, and limitations of protective clothing;

(vi) The purpose and a description of the medical surveillance program required by WAC 296-62-07423;

(vii) The contents of this section and its appendices;

(viii) The employee's rights of access to records under WAC 296-62-05213; and

(ix) The purpose, proper use, limitations, and other training requirements for respiratory protection as required in chapter 296-62 WAC, Part E.

(d) Additional access to information and training program and materials.

(i) The employer shall make a copy of this section and its appendices readily available without cost to all affected employees and shall provide a copy if requested.

(ii) The employer shall provide to the director, upon request, all materials relating to the employee information and the training program.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07425, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07425, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07425, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07431 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07433 Appendices. WAC 296-62-07441, Appendix A; WAC 296-62-07443, Appendix B; WAC 296-62-07447, Appendix D; WAC 296-62-07449, Appendix E; and WAC 296-62-07451, Appendix F are non-mandatory appendices and are not intended to create any additional obligations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-07433, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07433, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07441 Appendix A, substance safety data sheet—Cadmium. (1) Substance identification.

(a) Substance: Cadmium.

(b) 8-Hour, time-weighted-average, permissible exposure limit (TWA PEL):

(c) TWA PEL: Five micrograms of cadmium per cubic meter of air 5 µg/m³, time-weighted average (TWA) for an 8-hour workday.

(d) Appearance: Cadmium metal—soft, blue-white, malleable, lustrous metal or grayish-white powder. Some cadmium compounds may also appear as a brown, yellow, or red powdery substance.

(2) Health hazard data.

(a) Routes of exposure. Cadmium can cause local skin or eye irritation. Cadmium can affect your health if you inhale it or if you swallow it.

(b) Effects of overexposure.

(i) Short-term (acute) exposure: Cadmium is much more dangerous by inhalation than by ingestion. High exposures to cadmium that may be immediately dangerous to life or health occur in jobs where workers handle large quantities of cadmium dust or fume; heat cadmium-containing compounds or cadmium-coated surfaces; weld with cadmium solders or cut cadmium-containing materials such as bolts.

(ii) Severe exposure may occur before symptoms appear. Early symptoms may include mild irritation of the upper respiratory tract, a sensation of constriction of the throat, a metallic taste and/or a cough. A period of one to ten hours may precede the onset of rapidly progressing shortness of breath, chest pain, and flu-like symptoms with weakness, fever, headache, chills, sweating, and muscular pain. Acute pulmonary edema usually develops within twenty-four hours and reaches a maximum by three days. If death from

asphyxia does not occur, symptoms may resolve within a week.

(iii) Long-term (chronic) exposure. Repeated or long-term exposure to cadmium, even at relatively low concentrations, may result in kidney damage and an increased risk of cancer of the lung and of the prostate.

(c) Emergency first aid procedures.

(i) Eye exposure: Direct contact may cause redness or pain. Wash eyes immediately with large amounts of water, lifting the upper and lower eyelids. Get medical attention immediately.

(ii) Skin exposure: Direct contact may result in irritation. Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water. Get medical attention immediately.

(iii) Ingestion: Ingestion may result in vomiting, abdominal pain, nausea, diarrhea, headache, and sore throat. Treatment for symptoms must be administered by medical personnel. Under no circumstances should the employer allow any person whom he/she retains, employs, supervises, or controls to engage in therapeutic chelation. Such treatment is likely to translocate cadmium from pulmonary or other tissue to renal tissue. Get medical attention immediately.

(iv) Inhalation: If large amounts of cadmium are inhaled, the exposed person must be moved to fresh air at once. If breathing has stopped, perform cardiopulmonary resuscitation. Administer oxygen if available. Keep the affected person warm and at rest. Get medical attention immediately.

(v) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, attempt rescue only after notifying at least one other person of the emergency and putting into effect established emergency procedures. Do not become a casualty yourself. Understand your emergency rescue procedures and know the location of the emergency equipment before the need arises.

(3) Employee information.

(a) Protective clothing and equipment.

(i) Respirators: You may be required to wear a respirator for nonroutine activities; in emergencies; while your employer is in the process of reducing cadmium exposures through engineering controls; and where engineering controls are not feasible. If air-purifying respirators are worn, they must have a label issued by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with cadmium. Cadmium does not have a detectable odor except at levels well above the permissible exposure limits. If you can smell cadmium while wearing a respirator, proceed immediately to fresh air. If you experience difficulty breathing while wearing a respirator, tell your employer.

(ii) Protective clothing: You may be required to wear impermeable clothing, gloves, foot gear, a face shield, or other appropriate protective clothing to prevent skin contact with cadmium. Where protective clothing is required, your employer must provide clean garments to you as necessary to assure that the clothing protects you adequately. The employer must replace or repair protective clothing that has become torn or otherwise damaged.

(iii) Eye protection: You may be required to wear splash-proof or dust resistant goggles to prevent eye contact with cadmium.

(b) Employer requirements.

(i) Medical: If you are exposed to cadmium at or above the action level, your employer is required to provide a medical examination, laboratory tests and a medical history according to the medical surveillance provisions under WAC 296-62-07423. (See summary chart and tables in this section, appendix A.) These tests shall be provided without cost to you. In addition, if you are accidentally exposed to cadmium under conditions known or suspected to constitute toxic exposure to cadmium, your employer is required to make special tests available to you.

(ii) Access to records: All medical records are kept strictly confidential. You or your representative are entitled to see the records of measurements of your exposure to cadmium. Your medical examination records can be furnished to your personal physician or designated representative upon request by you to your employer.

(iii) Observation of monitoring: Your employer is required to perform measurements that are representative of your exposure to cadmium and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you or your representative must also be provided with, and must wear the protective clothing and equipment.

(c) Employee requirements. You will not be able to smoke, eat, drink, chew gum or tobacco, or apply cosmetics while working with cadmium in regulated areas. You will also not be able to carry or store tobacco products, gum, food, drinks, or cosmetics in regulated areas because these products easily become contaminated with cadmium from the workplace and can therefore create another source of unnecessary cadmium exposure. Some workers will have to change out of work clothes and shower at the end of the day, as part of their workday, in order to wash cadmium from skin and hair. Handwashing and cadmium-free eating facilities shall be provided by the employer and proper hygiene should always be performed before eating. It is also recommended that you do not smoke or use tobacco products, because among other things, they naturally contain cadmium. For further information, read the labeling on such products.

(4) Physician information.

(a) Introduction. The medical surveillance provisions of WAC 296-62-07423 generally are aimed at accomplishing three main interrelated purposes: First, identifying employees at higher risk of adverse health effects from excess, chronic exposure to cadmium; second, preventing cadmium-induced disease; and third, detecting and minimizing existing cadmium-induced disease. The core of medical surveillance in this standard is the early and periodic monitoring of the employee's biological indicators of:

- (i) Recent exposure to cadmium;
- (ii) Cadmium body burden; and

(iii) Potential and actual kidney damage associated with exposure to cadmium. The main adverse health effects associated with cadmium overexposure are lung cancer and kidney dysfunction. It is not yet known how to adequately biologically monitor human beings to specifically prevent cadmium-induced lung cancer. By contrast, the kidney can be monitored to provide prevention and early detection of cadmium-induced kidney damage. Since, for noncarcinogenic effects, the kidney is considered the primary target organ of chronic exposure to cadmium, the medical surveillance provisions of this standard effectively focus on cadmium-induced kidney disease. Within that focus, the aim, where possible, is to prevent the onset of such disease and, where necessary, to minimize such disease as may already exist. The by-products of successful prevention of kidney disease are anticipated to be the reduction and prevention of other cadmium-induced diseases.

(b) Health effects. The major health effects associated with cadmium overexposure are described below.

(i) Kidney: The most prevalent nonmalignant disease observed among workers chronically exposed to cadmium is kidney dysfunction. Initially, such dysfunction is manifested as proteinuria. The proteinuria associated with cadmium exposure is most commonly characterized by excretion of low-molecular weight proteins (15,000 to 40,000 MW) accompanied by loss of electrolytes, uric acid, calcium, amino acids, and phosphate. The compounds commonly excreted include: beta-2-microglobulin (β_2 -M), retinol binding protein (RBP), immunoglobulin light chains, and lysozyme. Excretion of low molecular weight proteins are characteristic of damage to the proximal tubules of the kidney (Iwao et al., 1980). It has also been observed that exposure to cadmium may lead to urinary excretion of high-molecular weight proteins such as albumin, immunoglobulin G, and glycoproteins (Ex. 29). Excretion of high-molecular weight proteins is typically indicative of damage to the glomeruli of the kidney. Bernard et al., (1979) suggest that damage to the glomeruli and damage to the proximal tubules of the kidney may both be linked to cadmium exposure but they may occur independently of each other. Several studies indicate that the onset of low-molecular weight proteinuria is a sign of irreversible kidney damage (Friberg et al., 1974; Roels et al., 1982; Piscator 1984; Elinder et al., 1985; Smith et al., 1986). Above specific levels of β_2 -M associated with cadmium exposure it is unlikely that β_2 -M levels return to normal even when cadmium exposure is eliminated by removal of the individual from the cadmium work environment (Friberg, Ex. 29, 1990). Some studies indicate that such proteinuria may be progressive; levels of β_2 -M observed in the urine increase with time even after cadmium exposure has ceased. See, for example, Elinder et al., 1985. Such observations, however, are not universal, and it has been suggested that studies in which proteinuria has not been observed to progress may not have tracked patients for a sufficiently long time interval (Jarup, Ex. 8-661). When cadmium exposure continues after the onset of proteinuria, chronic nephrotoxicity may occur (Friberg, Ex. 29). Uremia results from the inability of the glomerulus to adequately filter blood. This leads to severe disturbance of electrolyte concentrations and

may lead to various clinical complications including kidney stones (L-140-50). After prolonged exposure to cadmium, glomerular proteinuria, glucosuria, aminoaciduria, phosphaturia, and hypercalciuria may develop (Exs. 8-86, 4-28, 14-18). Phosphate, calcium, glucose, and amino acids are essential to life, and under normal conditions, their excretion should be regulated by the kidney. Once low molecular weight proteinuria has developed, these elements dissipate from the human body. Loss of glomerular function may also occur, manifested by decreased glomerular filtration rate and increased serum creatinine. Severe cadmium-induced renal damage may eventually develop into chronic renal failure and uremia (Ex. 55). Studies in which animals are chronically exposed to cadmium confirm the renal effects observed in humans (Friberg et al., 1986). Animal studies also confirm problems with calcium metabolism and related skeletal effects which have been observed among humans exposed to cadmium in addition to the renal effects. Other effects commonly reported in chronic animal studies include anemia, changes in liver morphology, immunosuppression and hypertension. Some of these effects may be associated with co-factors. Hypertension, for example, appears to be associated with diet as well as cadmium exposure. Animals injected with cadmium have also shown testicular necrosis (Ex. 8-86B).

(ii) Biological markers. It is universally recognized that the best measures of cadmium exposures and its effects are measurements of cadmium in biological fluids, especially urine and blood. Of the two, CdU is conventionally used to determine body burden of cadmium in workers without kidney disease. CdB is conventionally used to monitor for recent exposure to cadmium. In addition, levels of CdU and CdB historically have been used to predict the percent of the population likely to develop kidney disease (Thun et al., Ex. L-140-50; WHO, Ex. 8-674; ACGIH, Exs. 8-667, 140-50). The third biological parameter upon which WISHA relies for medical surveillance is beta-2-microglobulin in urine (β_2 -M), a low molecular weight protein. Excess β_2 -M has been widely accepted by physicians and scientists as a reliable indicator of functional damage to the proximal tubule of the kidney (Exs. 8-447, 144-3-C, 4-47, L-140-45, 19-43-A). Excess β_2 -M is found when the proximal tubules can no longer reabsorb this protein in a normal manner. This failure of the proximal tubules is an early stage of a kind of kidney disease that commonly occurs among workers with excessive cadmium exposure. Used in conjunction with biological test results indicating abnormal levels of CdU and CdB, the finding of excess β_2 -M can establish for an examining physician that any existing kidney disease is probably cadmium-related (Trs. 6/6/90, pp. 82-86, 122, 134). The upper limits of normal levels for cadmium in urine and cadmium in blood are 3 μ g Cd/gram creatinine in urine and 5 μ gCd/liter whole blood, respectively. These levels were derived from broad-based population studies. Three issues confront the physicians in the use of β_2 -M as a marker of kidney dysfunction and material impairment. First, there are a few other causes of elevated levels of β_2 -M not related to cadmium exposures, some of which may be rather common diseases and some of which are serious diseases (e.g., myeloma or transient flu, Exs. 29 and 8-086).

These can be medically evaluated as alternative causes (Friberg, Ex. 29). Also, there are other factors that can cause β_2 -M to degrade so that low levels would result in workers with tubular dysfunction. For example, regarding the degradation of β_2 -M, workers with acidic urine (pH<6) might have β_2 -M levels that are within the "normal" range when in fact kidney dysfunction has occurred (Ex. L-140-1) and the low molecular weight proteins are degraded in acid urine. Thus, it is very important that the pH of urine be measured, that urine samples be buffered as necessary (See WAC 296-62-07451, appendix F.), and that urine samples be handled correctly, i.e., measure the pH of freshly voided urine samples, then if necessary, buffer to pH>6 (or above for shipping purposes), measure pH again and then, perhaps, freeze the sample for storage and shipping. (See also WAC 296-62-07451, appendix F.) Second, there is debate over the pathological significance of proteinuria, however, most world experts believe that β_2 -M levels greater than 300 μ g/g Cr are abnormal (Elinder, Ex. 55, Friberg, Ex. 29). Such levels signify kidney dysfunction that constitutes material impairment of health. Finally, detection of β_2 -M at low levels has often been considered difficult, however, many laboratories have the capability of detecting excess β_2 -M using simple kits, such as the Phadebas Delphia test, that are accurate to levels of 100 μ g β_2 -M/g Cr U (Ex. L-140-1). Specific recommendations for ways to measure β_2 -M and proper handling of urine samples to prevent degradation of β_2 -M have been addressed by WISHA in WAC 296-62-07451, appendix F, in the section on laboratory standardization. All biological samples must be analyzed in a laboratory that is proficient in the analysis of that particular analyte, under WAC 296-62-07423 (1)(d). (See WAC 296-62-07451, appendix F). Specifically, under WAC 296-62-07423 (1)(d), the employer is to assure that the collecting and handling of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (β_2 -M) taken from employees is collected in a manner that assures reliability. The employer must also assure that analysis of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (β_2 -M) taken from employees is performed in laboratories with demonstrated proficiency for that particular analyte. (See WAC 296-62-07451, appendix F).

(iii) Lung and prostate cancer. The primary sites for cadmium-associated cancer appear to be the lung and the prostate (L-140-50). Evidence for an association between cancer and cadmium exposure derives from both epidemiological studies and animal experiments. Mortality from prostate cancer associated with cadmium is slightly elevated in several industrial cohorts, but the number of cases is small and there is not clear dose-response relationship. More substantive evidence exists for lung cancer. The major epidemiological study of lung cancer was conducted by Thun et al., (Ex. 4-68). Adequate data on cadmium exposures were available to allow evaluation of dose-response relationships between cadmium exposure and lung cancer. A statistically significant excess of lung cancer attributed to cadmium exposure was observed in this study even when confounding variables such as co-exposure to arsenic and smoking habits were taken into

consideration (Ex. L-140-50). The primary evidence for quantifying a link between lung cancer and cadmium exposure from animal studies derives from two rat bioassay studies; one by Takenaka et al., (1983), which is a study of cadmium chloride and a second study by Oldiges and Glaser (1990) of four cadmium compounds. Based on the above cited studies, the U.S. Environmental Protection Agency (EPA) classified cadmium as "B1", a probable human carcinogen, in 1985 (Ex. 4-4). The International Agency for Research on Cancer (IARC) in 1987 also recommended that cadmium be listed as "2A", a probable human carcinogen (Ex. 4-15). The American Conference of Governmental Industrial Hygienists (ACGIH) has recently recommended that cadmium be labeled as a carcinogen. Since 1984, NIOSH has concluded that cadmium is possibly a human carcinogen and has recommended that exposures be controlled to the lowest level feasible.

(iv) Noncarcinogenic effects. Acute pneumonitis occurs 10 to 24 hours after initial acute inhalation of high levels of cadmium fumes with symptoms such as fever and chest pain (Exs. 30, 8-86B). In extreme exposure cases pulmonary edema may develop and cause death several days after exposure. Little actual exposure measurement data is available on the level of airborne cadmium exposure that causes such immediate adverse lung effects, nonetheless, it is reasonable to believe a cadmium concentration of approximately 1 mg/m³ over an eight hour period is "immediately dangerous" (55 FR 4052, ANSI; Ex. 8-86B). In addition to acute lung effects and chronic renal effects, long term exposure to cadmium may cause other severe effects on the respiratory system. Reduced pulmonary function and chronic lung disease indicative of emphysema have been observed in workers who have had prolonged exposure to cadmium dust or fumes (Exs. 4-29, 4-22, 4-42, 4-50, 4-63). In a study of workers conducted by Kazantzis et al., a statistically significant excess of worker deaths due to chronic bronchitis was found, which in his opinion was directly related to high cadmium exposures of 1 mg/m³ or more (Tr. 6/8/90, pp. 156-157). Cadmium need not be respirable to constitute a hazard. Inspirable cadmium particles that are too large to be respirable but small enough to enter the tracheobronchial region of the lung can lead to bronchoconstriction, chronic pulmonary disease, and cancer of that portion of the lung. All of these diseases have been associated with occupational exposure to cadmium (Ex. 8-86B). Particles that are constrained by their size to the extra-thoracic regions of the respiratory system such as the nose and maxillary sinuses can be swallowed through mucociliary clearance and be absorbed into the body (ACGIH, Ex. 8-692). The impaction of these particles in the upper airways can lead to anosmia, or loss of sense of smell, which is an early indication of overexposure among workers exposed to heavy metals. This condition is commonly reported among cadmium-exposed workers (Ex. 8-86-B).

(c) Medical surveillance. In general, the main provisions of the medical surveillance section of the standard, under WAC 296-62-07423 (1) through (16), are as follows:

- (i) Workers exposed above the action level are covered;
- (ii) Workers with intermittent exposures are not covered;
- (iii) Past workers who are covered receive biological monitoring for at least one year;

(iv) Initial examinations include a medical questionnaire and biological monitoring of cadmium in blood (CdB), cadmium in urine (CdU), and Beta-2-microglobulin in urine (β_2 -M);

(v) Biological monitoring of these three analytes is performed at least annually; full medical examinations are performed biennially;

(vi) Until five years from the effective date of the standard, medical removal is required when CdU is greater than 15 μ g/gram creatinine (g Cr), or CdB is greater than 15 μ g/liter whole blood (lwb), or β_2 -M is greater than 1500 μ g/g Cr, and CdB is greater than 5 μ g/lwb or CdU is greater than 3 μ g/g Cr;

(vii) Beginning five years after the standard is in effect, medical removal triggers will be reduced;

(viii) Medical removal protection benefits are to be provided for up to eighteen months;

(ix) Limited initial medical examinations are required for respirator usage;

(x) Major provisions are fully described under WAC 296-62-07423; they are outlined here as follows:

(A) Eligibility.

(B) Biological monitoring.

(C) Actions triggered by levels of CdU, CdB, and β_2 -M (See Summary Charts and Tables in WAC 296-62-07441(5).)

(D) Periodic medical surveillance.

(E) Actions triggered by periodic medical surveillance (See appendix A Summary Chart and Tables in WAC 296-62-07441(5).)

(F) Respirator usage.

(G) Emergency medical examinations.

(H) Termination examination.

(I) Information to physician.

(J) Physician's medical opinion.

(K) Medical removal protection.

(L) Medical removal protection benefits.

(M) Multiple physician review.

(N) Alternate physician review.

(O) Information employer gives to employee.

(P) Recordkeeping.

(Q) Reporting on OSHA form 200.

(xi) The above mentioned summary of the medical surveillance provisions, the summary chart, and tables for the actions triggered at different levels of CdU, CdB and β_2 -M (in subsection (5) of this section, Attachment 1) are included only for the purpose of facilitating understanding of the provisions of WAC 296-62-07423(3) of the final cadmium standard. The summary of the provisions, the summary chart, and the tables do not add to or reduce the requirements in WAC 296-62-07423(3).

(d) Recommendations to physicians.

(i) It is strongly recommended that patients with tubular proteinuria are counseled on: The hazards of smoking; avoidance of nephrotoxins and certain prescriptions and over-the-counter medications that may exacerbate kidney symptoms; how to control diabetes and/or blood pressure; proper hydration, diet, and exercise (Ex. 19-2). A list of prominent or common nephrotoxins is attached. (See subsection (6) of this section, Attachment 2.)

(ii) DO NOT CHELATE; KNOW WHICH DRUGS ARE NEPHROTOXINS OR ARE ASSOCIATED WITH NEPHRITIS.

(iii) The gravity of cadmium-induced renal damage is compounded by the fact there is no medical treatment to prevent or reduce the accumulation of cadmium in the kidney (Ex. 8-619). Dr. Friberg, a leading world expert on cadmium toxicity, indicated in 1992, that there is no form of chelating agent that could be used without substantial risk. He stated that tubular proteinuria has to be treated in the same way as other kidney disorders (Ex. 29).

(iv) After the results of a workers' biological monitoring or medical examination are received the employer is required to provide an information sheet to the patient, briefly explaining the significance of the results. (See subsection (7) of this section.)

(v) For additional information the physician is referred to the following additional resources:

(A) The physician can always obtain a copy of the OSHA final rule preamble, with its full discussion of the health effects, from OSHA's Computerized Information System (OCIS).

(B) The OSHA Docket Officer maintains a record of the OSHA rulemaking. The Cadmium Docket (H-057A), is located at 200 Constitution Ave. NW., Room N-2625, Washington, DC 20210; telephone: (202) 219-7894.

(C) The following articles and exhibits in particular from that docket (H-057A):

Exhibit number	Author and paper title
8-447	Lauwerys et. al., Guide for physicians, "Health Maintenance of Workers Exposed to Cadmium," published by the Cadmium Council.
4-67	Takenaka, S., H. Oldiges, H. Konig, D. Hochrainer, G. Oberdorster. "Carcinogenicity of Cadmium Chloride Aerosols in Wistar Rats". JNCI 70:367-373, 1983. (32)
4-68	Thun, M.J., T.M. Schnoor, A.B. Smith, W.E. Halperin, R.A. Lemen. "Mortality Among a Cohort of U.S. Cadmium Production Workers—An Update." JNCI 74(2):325-33, 1985. (8)
4-25	Elinder, C.G., Kjellstrom, T., Hogstedt, C., et al., "Cancer Mortality of Cadmium Workers." Brit. J. Ind. Med. 42:651-655, 1985. (14)
4-26	Ellis, K.J. et al., "Critical Concentrations of Cadmium in Human Renal Cortex: Dose Effect Studies to Cadmium Smelter Workers." J. Toxicol. Environ. Health 7:691-703, 1981. (76)
4-27	Ellis, K.J., S.H. Cohn and T.J. Smith. "Cadmium Inhalation Exposure Estimates: Their Significance with Respect to Kidney and Liver Cadmium Burden." J. Toxicol. Environ. Health 15:173-187, 1985.

Exhibit number	Author and paper title
4-28	Falck, F.Y., Jr., Fine, L.J., Smith, R.G., McClatchey, K.D., Annesley, T., England, B., and Schork, A.M. "Occupational Cadmium Exposure and Renal Status." <i>Am. J. Ind. Med.</i> 4:541, 1983. (64)
8-86A	Friberg, L., C.G. Elinder, et al., "Cadmium and Health a Toxicological and Epidemiological Appraisal, Volume I, Exposure, Dose, and Metabolism." CRC Press, Inc., Boca Raton, FL, 1986. (Available from the OSHA Technical Data Center)
8-86B	Friberg, L., C.G. Elinder, et al., "Cadmium and Health: A Toxicological and Epidemiological Appraisal, Volume II, Effects and Response." CRC Press, Inc., Boca Raton, FL, 1986. (Available from the OSHA Technical Data Center)
L-140-45	Elinder, C.G., "Cancer Mortality of Cadmium Workers", <i>Brit. J. Ind. Med.</i> , 42, 651-655, 1985.
L-140-50	Thun, M., Elinder, C.G., Friberg, L., "Scientific Basis for an Occupational Standard for Cadmium, <i>Am. J. Ind. Med.</i> , 20; 629-642, 1991.

(5) Information sheet. The information sheet (subsection (8) of this section, Attachment 3) or an equally explanatory one should be provided to you after any biological monitoring results are reviewed by the physician, or where applicable, after any medical examination.

(6) Attachment 1—Appendix A, summary chart and Tables A and B of actions triggered by biological monitoring.

(a) Summary chart: WAC 296-62-07423(3) Medical surveillance—Categorizing biological monitoring results.

(i) Biological monitoring results categories are set forth in Table A for the periods ending December 31, 1998, and for the period beginning January 1, 1999.

(ii) The results of the biological monitoring for the initial medical exam and the subsequent exams shall determine an employee's biological monitoring result category.

(b) Actions triggered by biological monitoring.

(i) The actions triggered by biological monitoring for an employee are set forth in Table B.

(ii) The biological monitoring results for each employee under WAC 296-62-07423(3) shall determine the actions required for that employee. That is, for any employee in biological monitoring category C, the employer will perform all of the actions for which there is an X in column C of Table B.

(iii) An employee is assigned the alphabetical category ("A" being the lowest) depending upon the test results of the three biological markers.

(iv) An employee is assigned category A if monitoring results for all three biological markers fall at or below the levels indicated in the table listed for category A.

(v) An employee is assigned category B if any monitoring result for any of the three biological markers fall within

the range of levels indicated in the table listed for category B, providing no result exceeds the levels listed for category B.

(vi) An employee is assigned category C if any monitoring result for any of the three biological markers are above the levels listed for category C.

(c) The user of Tables A and B should know that these tables are provided only to facilitate understanding of the relevant provisions of WAC 296-62-07423. Tables A and B are not meant to add to or subtract from the requirements of those provisions.

Table A
Categorization of Biological Monitoring Results

Applicable Through 1998 Only

Biological marker	Monitoring result categories		
	A	B	C
Cadmium in urine (CdU) (µg/g creatinine)	≤3	>3 and ≤15	>15
β ₂ -microglobulin (β ₂ -M) (µg/g creatinine)	≤300	>300 and ≤1500	>1500*
Cadmium in blood (CdB) (µg/liter whole blood)	≤5	>5 and ≤15	>15

* If an employee's β₂-M levels are above 1,500 µg/g creatinine, in order for mandatory medical removal to be required (See WAC 296-62-07441, Appendix A Table B.), either the employee's CdU level must also be >3 µg/g creatinine or CdB level must also be >5 µg/liter whole blood.

Applicable Beginning January 1, 1999

Biological marker	Monitoring result categories		
	A	B	C
Cadmium in urine (CdU) (µg/g creatinine)	≤3	>3 and ≤7	>7
β ₂ -microglobulin (β ₂ -M) (µg/g creatinine)	≤300	>300 and ≤750	>750*
Cadmium in blood (CdB) (µg/liter whole blood)	≤5	>5 and ≤10	>10

* If an employee's β₂-M levels are above 750 µg/g creatinine, in order for mandatory medical removal to be required (See WAC 296-62-07441, Appendix A Table B.), either the employee's CdU level must also be >3 µg/g creatinine or CdB level must also be >5 µg/liter whole blood.

Table B—Actions determined by biological monitoring.

This table presents the actions required based on the monitoring result in Table A. Each item is a separate requirement in citing noncompliance. For example, a medical examination within ninety days for an employee in category B is separate from the requirement to administer a periodic medical examination for category B employees on an annual basis.

Table B
Monitoring result category

	A ¹	B ¹	C ¹
Required actions			
(1) Biological monitoring:			
(a) Annual.	X		
(b) Semiannual		X	
(c) Quarterly			X
(2) Medical examination:			
(a) Biennial	X		
(b) Annual.		X	
(c) Semiannual.			X

Table B
Monitoring result category

	A ¹	B ¹	C ¹
(d) Within 90 days		X	X
(3) Assess within two weeks:			
(a) Excess cadmium exposure		X	X
(b) Work practices		X	X
(c) Personal hygiene		X	X
(d) Respirator usage		X	X
(e) Smoking history		X	X
(f) Hygiene facilities		X	X
(g) Engineering controls		X	X
(h) Correct within 30 days		X	X
(i) Periodically assess exposures			X
(4) Discretionary medical removal		X	X
(5) Mandatory medical removal			X ²

¹ For all employees covered by medical surveillance exclusively because of exposures prior to the effective date of this standard, if they are in Category A, the employer shall follow the requirements of WAC 296-62-07423 (3)(a)(ii) and (4)(e)(i). If they are in Category B or C, the employer shall follow the requirements of WAC 296-62-07423 (4)(e)(ii) and (iii).

² See footnote in Table A.

(7) Attachment 2, list of medications.

(a) A list of the more common medications that a physician, and the employee, may wish to review is likely to include some of the following:

(i) Anticonvulsants: Paramethadione, phenytoin, trimethadone;

(ii) Antihypertensive drugs: Captopril, methyldopa;

(iii) Antimicrobials: Aminoglycosides, amphotericin B, cephalosporins, ethambutol;

(iv) Antineoplastic agents: Cisplatin, methotrexate, mitomycin-C, nitrosoureas, radiation;

(v) Sulfonamide diuretics: Acetazolamide, chlorthalidone, furosemide, thiazides;

(vi) Halogenated alkanes, hydrocarbons, and solvents that may occur in some settings: Carbon tetrachloride, ethylene glycol, toluene; iodinated radiographic contrast media; nonsteroidal anti-inflammatory drugs; and

(vii) Other miscellaneous compounds: Acetaminophen, allopurinol, amphetamines, azathioprine, cimetidine, cyclosporine, lithium, methoxyflurane, methysergide, D-penicillamine, phenacetin, phenendione.

(b) A list of drugs associated with acute interstitial nephritis includes:

(i) Antimicrobial drugs: Cephalosporins, chloramphenicol, colistin, erythromycin, ethambutol, isoniazid, para-aminosalicylic acid, penicillins, polymyxin B, rifampin, sulfonamides, tetracyclines, and vancomycin;

(ii) Other miscellaneous drugs: Allopurinol, antipyrine, azathioprine, captopril, cimetidine, clofibrate, methyldopa, phenindione, phenylpropanolamine, phenytoin, probenecid, sulfapyrazone, sulfonamide diuretics, triamterene; and

(iii) Metals: Bismuth, gold. This list has been derived from commonly available medical textbooks (e.g., Ex. 14-18). The list has been included merely to facilitate the physician's, employer's, and employee's understanding. The list

does not represent an official OSHA opinion or policy regarding the use of these medications for particular employees. The use of such medications should be under physician discretion.

(8) Attachment 3—Biological monitoring and medical examination results.

Employee _____

Testing _____

Date _____

Cadmium in Urine ___ µg/g Cr—Normal Levels:

≤3 µg/g Cr.

Cadmium in Blood ___ µg/lwb—Normal Levels:

≤5 µg/lwb.

Beta-2-microglobulin in Urine ___ µg/g Cr—Normal

Levels: ≤300 µg/g Cr.

Physical Examination Results: N/A ___

Satisfactory ___

Unsatisfactory ___ (see physician again).

Physician's Review of Pulmonary Function Test:

N/A ___ Normal ___

Abnormal ___.

Next biological monitoring or medical examination scheduled for _____

(a) The biological monitoring program has been designed for three main purposes:

(i) To identify employees at risk of adverse health effects from excess, chronic exposure to cadmium;

(ii) To prevent cadmium-induced disease(s); and

(iii) To detect and minimize existing cadmium-induced disease(s).

(b) The levels of cadmium in the urine and blood provide an estimate of the total amount of cadmium in the body. The amount of a specific protein in the urine (beta-2-microglobulin) indicates changes in kidney function. All three tests must be evaluated together. A single mildly elevated result may not be important if testing at a later time indicates that the results are normal and the workplace has been evaluated to decrease possible sources of cadmium exposure. The levels of cadmium or beta-2-microglobulin may change over a period of days to months and the time needed for those changes to occur is different for each worker.

(c) If the results for biological monitoring are above specific "high levels" (cadmium urine greater than 10 micrograms per gram of creatinine µg/g Cr), cadmium blood greater than 10 micrograms per liter of whole blood (µg/lwb), or beta-2-microglobulin greater than 1000 micrograms per gram of creatinine (µg/g Cr)), the worker has a much greater chance of developing other kidney diseases.

(d) One way to measure for kidney function is by measuring beta-2-microglobulin in the urine. Beta-2-microglobulin is a protein which is normally found in the blood as it is being filtered in the kidney, and the kidney reabsorbs or returns almost all of the beta-2-microglobulin to the blood. A very small amount (less than 300 µg/g Cr in the urine) of beta-2-microglobulin is not reabsorbed into the blood, but is released in the urine. If cadmium damages the kidney, the amount of beta-2-microglobulin in the urine increases

because the kidney cells are unable to reabsorb the beta-2-microglobulin normally. An increase in the amount of beta-2-microglobulin in the urine is a very early sign of kidney dysfunction. A small increase in beta-2-microglobulin in the urine will serve as an early warning sign that the worker may be absorbing cadmium from the air, cigarettes contaminated in the workplace, or eating in areas that are cadmium contaminated.

(e) Even if cadmium causes permanent changes in the kidney's ability to reabsorb beta-2-microglobulin, and the beta-2-microglobulin is above the "high levels," the loss of kidney function may not lead to any serious health problems. Also, renal function naturally declines as people age. The risk for changes in kidney function for workers who have biological monitoring results between the "normal values" and the "high levels" is not well known. Some people are more cadmium-tolerant, while others are more cadmium-susceptible.

(f) For anyone with even a slight increase of beta-2-microglobulin, cadmium in the urine, or cadmium in the blood, it is very important to protect the kidney from further damage. Kidney damage can come from other sources than excess cadmium-exposure so it is also recommended that if a worker's levels are "high" he/she should receive counseling about drinking more water; avoiding cadmium-tainted tobacco and certain medications (nephrotoxins, acetaminophen); controlling diet, vitamin intake, blood pressure and diabetes; etc.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07441, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07441, filed 7/20/94, effective 9/20/94; 93-21-075 (Order 93-06), § 296-62-07441, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07441, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07445 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07460 Butadiene. (1) Scope and application.

(a) This section applies to all occupational exposures to 1,3-Butadiene (BD), Chemical Abstracts Service Registry No. 106-99-0, except as provided in (b) of this subsection.

(b)(i) Except for the recordkeeping provisions in subsection (13)(a) of this section, this section does not apply to the processing, use, or handling of products containing BD or to other work operations and streams in which BD is present where objective data are reasonably relied upon that demonstrate the work operation or the product or the group of products or operations to which it belongs may not reasonably be foreseen to release BD in airborne concentrations at or above the action level or in excess of the STEL under the expected conditions of processing, use, or handling that will cause the greatest possible release or in any plausible accident.

(ii) This section also does not apply to work operations, products or streams where the only exposure to BD is from liquid mixtures containing 0.1% or less of BD by volume or the vapors released from such liquids, unless objective data become available that show that airborne concentrations generated by such mixtures can exceed the action level or STEL

under reasonably predictable conditions of processing, use or handling that will cause the greatest possible release.

(iii) Except for labeling requirements and requirements for emergency response, this section does not apply to the storage, transportation, distribution or sale of BD or liquid mixtures in intact containers or in transportation pipelines sealed in such a manner as to fully contain BD vapors or liquids.

(c) Where products or processes containing BD are exempted under (b) of this subsection, the employer shall maintain records of the objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in subsection (13)(a) of this section.

(2) Definitions: For the purpose of this section, the following definitions shall apply:

"Action level" means a concentration of airborne BD of 0.5 ppm calculated as an 8-hour time-weighted average.

"Director" means the director of the department of labor and industries, or authorized representatives.

"Authorized person" means any person specifically designated by the employer, whose duties require entrance into a regulated area, or a person entering such an area as a designated representative of employees to exercise the right to observe monitoring and measuring procedures under subsection (4)(h) of this section, or a person designated under the WISH Act or regulations issued under the WISH Act to enter a regulated area.

"1,3-Butadiene" means an organic compound with chemical formula $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$ that has a molecular weight of approximately 54.15 gm/mole.

"Business day" means any Monday through Friday, except those days designated as federal, state, local or company specific holidays.

"Complete blood count (CBC)" means laboratory tests performed on whole blood specimens and includes the following: White blood cell count (WBC), hematocrit (Hct), red blood cell count (RBC), hemoglobin (Hgb), differential count of white blood cells, red blood cell morphology, red blood cell indices, and platelet count.

"Day" means any part of a calendar day.

"Emergency situation" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of BD.

"Employee exposure" means exposure of a worker to airborne concentrations of BD which would occur if the employee were not using respiratory protective equipment.

"Objective data" means monitoring data, or mathematical modelling or calculations based on composition, chemical and physical properties of a material, stream or product.

"Permissible exposure limits (PELs)" means either the 8-hour time-weighted average (8-hr TWA) exposure or the short-term exposure limit (STEL).

"Physician or other licensed health care professional" is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide one or more of the specific health care services required by (k) of this subsection.

"Regulated area" means any area where airborne concentrations of BD exceed or can reasonably be expected to exceed the 8-hour time-weighted average (8-hr TWA) exposure of 1 ppm or the short-term exposure limit (STEL) of 5 ppm for 15 minutes.

"This section" means this 1,3-butadiene standard.

(3) Permissible exposure limits (PELs).

(a) Time-weighted average (TWA) limit. The employer shall ensure that no employee is exposed to an airborne concentration of BD in excess of one part BD per million parts of air (ppm) measured as an eight (8)-hour time-weighted average.

(b) Short-term exposure limit (STEL). The employer shall ensure that no employee is exposed to an airborne concentration of BD in excess of five parts of BD per million parts of air (5 ppm) as determined over a sampling period of fifteen minutes.

(4) Exposure monitoring.

(a) General.

(i) Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 15-minute short-term exposures of each employee.

(ii) Representative 8-hour TWA employee exposure shall be determined on the basis of one or more samples representing full-shift exposure for each shift and for each job classification in each work area.

(iii) Representative 15-minute short-term employee exposures shall be determined on the basis of one or more samples representing 15-minute exposures associated with operations that are most likely to produce exposures above the STEL for each shift and for each job classification in each work area.

(iv) Except for the initial monitoring required under (b) of this subsection, where the employer can document that exposure levels are equivalent for similar operations on different work shifts, the employer need only determine representative employee exposure for that operation from the shift during which the highest exposure is expected.

(b) Initial monitoring.

(i) Each employer who has a workplace or work operation covered by this section, shall perform initial monitoring to determine accurately the airborne concentrations of BD to which employees may be exposed, or shall rely on objective data pursuant to subsection (1)(b)(i) of this section to fulfill this requirement.

(ii) Where the employer has monitored within two years prior to the effective date of this section and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of (b)(i) of this subsection, provided that the conditions under which the initial monitoring was conducted have not changed in a manner that may result in new or additional exposures.

(c) Periodic monitoring and its frequency.

(i) If the initial monitoring required by (b) of this subsection reveals employee exposure to be at or above the action level but at or below both the 8-hour TWA limit and the STEL, the employer shall repeat the representative monitoring required by (a) of this subsection every twelve months.

(ii) If the initial monitoring required by (b) of this subsection reveals employee exposure to be above the 8-hour TWA limit, the employer shall repeat the representative monitoring required by (a)(ii) of this subsection at least every three months until the employer has collected two samples per quarter (each at least 7 days apart) within a two-year period, after which such monitoring must occur at least every six months.

(iii) If the initial monitoring required by (b) of this subsection reveals employee exposure to be above the STEL, the employer shall repeat the representative monitoring required by (a)(iii) of this subsection at least every three months until the employer has collected two samples per quarter (each at least 7 days apart) within a two-year period, after which such monitoring must occur at least every six months.

(iv) The employer may alter the monitoring schedule from every six months to annually for any required representative monitoring for which two consecutive measurements taken at least 7 days apart indicate that employee exposure has decreased to or below the 8-hour TWA, but is at or above the action level.

(d) Termination of monitoring.

(i) If the initial monitoring required by (b) of this subsection reveals employee exposure to be below the action level and at or below the STEL, the employer may discontinue the monitoring for employees whose exposures are represented by the initial monitoring.

(ii) If the periodic monitoring required by (c) of this subsection reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level and at or below the STEL, the employer may discontinue the monitoring for those employees who are represented by such monitoring.

(e) Additional monitoring.

(i) The employer shall institute the exposure monitoring required under subsection (4) of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to BD or when the employer has any reason to suspect that a change may result in new or additional exposures.

(ii) Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure above the 8-hr TWA limit or above the STEL, the employer shall monitor (using leak source, such as direct reading instruments, area or personal monitoring), after the cleanup of the spill or repair of the leak, rupture or other breakdown, to ensure that exposures have returned to the level that existed prior to the incident.

(f) Accuracy of monitoring.

Monitoring shall be accurate, at a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of BD at or above the 1 ppm TWA limit and to within plus or minus 35 percent for airborne concentrations of BD at or above the action level of 0.5 ppm and below the 1 ppm TWA limit.

(g) Employee notification of monitoring results.

(i) The employer shall, within 5 business days after the receipt of the results of any monitoring performed under this section, notify the affected employees of these results in writ-

ing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(ii) The employer shall, within 15 business days after receipt of any monitoring performed under this section indicating the 8-hour TWA or STEL has been exceeded, provide the affected employees, in writing, with information on the corrective action being taken by the employer to reduce employee exposure to or below the 8-hour TWA or STEL and the schedule for completion of this action.

(h) Observation of monitoring.

(i) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to BD conducted in accordance with this section.

(ii) Observation procedures. When observation of the monitoring of employee exposure to BD requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer at no cost with protective clothing and equipment, and shall ensure that the observer uses this equipment and complies with all other applicable safety and health procedures.

(5) Regulated areas.

(a) The employer shall establish a regulated area whenever occupational exposures to airborne concentrations of BD exceed or can reasonably be expected to exceed the permissible exposure limits, either the 8-hr TWA or the STEL.

(b) Access to regulated areas shall be limited to authorized persons.

(c) Regulated areas shall be demarcated from the rest of the workplace in any manner that minimizes the number of employees exposed to BD within the regulated area.

(d) An employer at a multiemployer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to other employers with work operations at that worksite whose employees may have access to these areas.

(6) Methods of compliance.

(a) Engineering controls and work practices.

(i) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to or below the PELs, except to the extent that the employer can establish that these controls are not feasible or where subsection (8)(a)(i) of this section applies.

(ii) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the 8-hour TWA or STEL, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of subsection (8) of this section.

(b) Compliance plan.

(i) Where any exposures are over the PELs, the employer shall establish and implement a written plan to reduce employee exposure to or below the PELs primarily by means of engineering and work practice controls, as required by (a) of this subsection, and by the use of respiratory protection where required or permitted under this section. No compliance plan is required if all exposures are under the PELs.

(ii) The written compliance plan shall include a schedule for the development and implementation of the engineering

controls and work practice controls including periodic leak detection surveys.

(iii) Copies of the compliance plan required in (b) of this subsection shall be furnished upon request for examination and copying to the director, affected employees and designated employee representatives. Such plans shall be reviewed at least every 12 months, and shall be updated as necessary to reflect significant changes in the status of the employer's compliance program.

(iv) The employer shall not implement a schedule of employee rotation as a means of compliance with the PELs.

(7) Exposure goal program.

(a) For those operations and job classifications where employee exposures are greater than the action level, in addition to compliance with the PELs, the employer shall have an exposure goal program that is intended to limit employee exposures to below the action level during normal operations.

(b) Written plans for the exposure goal program shall be furnished upon request for examination and copying to the director, affected employees and designated employee representatives.

(c) Such plans shall be updated as necessary to reflect significant changes in the status of the exposure goal program.

(d) Respirator use is not required in the exposure goal program.

(e) The exposure goal program shall include the following items unless the employer can demonstrate that the item is not feasible, will have no significant effect in reducing employee exposures, or is not necessary to achieve exposures below the action level:

(i) A leak prevention, detection, and repair program.

(ii) A program for maintaining the effectiveness of local exhaust ventilation systems.

(iii) The use of pump exposure control technology such as, but not limited to, mechanical double-sealed or seal-less pumps.

(iv) Gauging devices designed to limit employee exposure, such as magnetic gauges on rail cars.

(v) Unloading devices designed to limit employee exposure, such as a vapor return system.

(vi) A program to maintain BD concentration below the action level in control rooms by use of engineering controls.

(8) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Nonroutine work operations that are performed infrequently and for which exposures are limited in duration;

(iii) Work operations for which feasible engineering controls and work-practice controls are not yet sufficient to reduce employee exposures to or below the PELs;

(iv) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E

(except WAC 296-62-07130(1), 296-62-07131 (4)(b)(i) and (ii), and 296-62-07150 through 296-62-07156).

(ii) If air-purifying respirators are used, the employer must replace the air-purifying filter elements according to the replacement schedule set for the class of respirators listed in Table 1 of this section, and at the beginning of each work shift.

(iii) Instead of using the replacement schedule listed in Table 1 of this section, the employer may replace cartridges or canisters at 90% of their expiration service life, provided the employer:

(A) Demonstrates that employees will be adequately protected by this procedure;

(B) Uses BD breakthrough data for this purpose that have been derived from tests conducted under worst-case conditions of humidity, temperature, and air-flow rate through the filter element, and the employer also describes

the data supporting the cartridge- or canister-change schedule, as well as the basis for using the data in the employer's respirator program.

(iv) A label must be attached to each filter element to indicate the date and time it is first installed on the respirator.

(v) If NIOSH approves an end-of-service-life indicator (ESLI) for an air-purifying filter element, the element may be used until the ESLI shows no further useful service life or until the element is replaced at the beginning of the next work shift, whichever occurs first.

(vi) Regardless of the air-purifying element used, if an employee detects the odor of BD, the employer must replace the air-purifying element immediately.

(c) Respirator selection.

(i) The employer must select appropriate respirators from Table 1 of this section.

Table 1. - Minimum Requirements for Respiratory Protection for Airborne BD

Concentration of Airborne BD (ppm) or condition of use	Minimum required respirator
Less than or equal to 5 ppm(5 times PEL)	(a) Air-purifying half mask or full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 4 hours.
Less than or equal to 10 ppm(10 times PEL)	(a) Air-purifying half mask or full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 3 hours.
Less than or equal to 25 ppm(25 times PEL)	(a) Air-purifying full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 2 hours. (b) Any powered air-purifying respirator equipped with approved BD or organic vapor cartridges. PAPR cartridges shall be replaced every 2 hours. (c) Continuous flow supplied air respirator equipped with a hood or helmet.
Less than or equal to 50 ppm(50 times PEL)	(a) Air-purifying full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 1 hour. (b) Powered air purifying respirator equipped with a tight-fitting facepiece and an approved BD or organic vapor cartridges. PAPR cartridges shall be replaced every 1 hour.
Less than or equal to 1,000 ppm (1,000 times PEL)	(a) Supplied air respirator equipped with a half mask or full facepiece and operated in a pressure demand or other positive pressure mode.
Greater than 1,000 ppm	(a) Self-contained breathing unknown concentration, or apparatus equipped with a fire fighting full facepiece and operated in a pressure demand or other positive pressure mode. (b) Any supplied air respirator equipped with a full facepiece and operated in a pressure demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure demand or other

Concentration of Airborne BD (ppm) or condition of use	Minimum required respirator
<p>Escape from IDLH Conditions</p> <p>Notes: Respirators approved for use in higher concentrations are permitted to be used in lower concentrations. Full facepiece is required when eye irritation is anticipated.</p> <p>(ii) Air-purifying respirators must have filter elements certified by NIOSH for organic vapor or BD.</p> <p>(iii) When an employee whose job requires the use of a respirator cannot use a negative-pressure respirator, the employer must provide the employee with a respirator that has less breathing resistance than the negative-pressure respirator, such as a powered air-purifying respirator or supplied-air respirator, when the employee is able to use it and if it provides the employee adequate protection.</p> <p>(9) Protective clothing and equipment. Where appropriate to prevent eye contact and limit dermal exposure to BD, the employer shall provide protective clothing and equipment at no cost to the employee and shall ensure its use. Eye and face protection shall meet the requirements of WAC 296-24-078.</p> <p>(10) Emergency situations. Written plan. A written plan for emergency situations shall be developed, or an existing plan shall be modified, to contain the applicable elements specified in WAC 296-24-567, Employee emergency plans and fire prevention plans, and in WAC 296-62-3112, hazardous waste operations and emergency responses, for each workplace where there is a possibility of an emergency.</p> <p>(11) Medical screening and surveillance.</p> <p>(a) Employees covered. The employer shall institute a medical screening and surveillance program as specified in this subsection for:</p> <p>(i) Each employee with exposure to BD at concentrations at or above the action level on 30 or more days or for employees who have or may have exposure to BD at or above the PELs on 10 or more days a year;</p> <p>(ii) Employers (including successor owners) shall continue to provide medical screening and surveillance for employees, even after transfer to a non-BD exposed job and regardless of when the employee is transferred, whose work histories suggest exposure to BD:</p> <p>(A) At or above the PELs on 30 or more days a year for 10 or more years;</p> <p>(B) At or above the action level on 60 or more days a year for 10 or more years; or</p> <p>(C) Above 10 ppm on 30 or more days in any past year; and</p> <p>(iii) Each employee exposed to BD following an emergency situation.</p> <p>(b) Program administration.</p> <p>(i) The employer shall ensure that the health questionnaire, physical examination and medical procedures are provided without cost to the employee, without loss of pay, and at a reasonable time and place.</p>	<p>positive pressure mode.</p> <p>(a) Any positive pressure self-contained breathing apparatus with an appropriate service life.</p> <p>(b) Any air-purifying full facepiece respirator equipped with a front or back mounted BD or organic vapor canister.</p> <p>(ii) Physical examinations, health questionnaires, and medical procedures shall be performed or administered by a physician or other licensed health care professional.</p> <p>(iii) Laboratory tests shall be conducted by an accredited laboratory.</p> <p>(c) Frequency of medical screening activities. The employer shall make medical screening available on the following schedule:</p> <p>(i) For each employee covered under (a)(i) and (ii) of this subsection, a health questionnaire and complete blood count (CBC) with differential and platelet count every year, and a physical examination as specified below:</p> <p>(A) An initial physical examination that meets the requirements of this rule, if twelve months or more have elapsed since the last physical examination conducted as part of a medical screening program for BD exposure;</p> <p>(B) Before assumption of duties by the employee in a job with BD exposure;</p> <p>(C) Every 3 years after the initial physical examination;</p> <p>(D) At the discretion of the physician or other licensed health care professional reviewing the annual health questionnaire and CBC;</p> <p>(E) At the time of employee reassignment to an area where exposure to BD is below the action level, if the employee's past exposure history does not meet the criteria of (a)(ii) of this subsection for continued coverage in the screening and surveillance program, and if twelve months or more have elapsed since the last physical examination; and</p> <p>(F) At termination of employment if twelve months or more have elapsed since the last physical examination.</p> <p>(ii) Following an emergency situation, medical screening shall be conducted as quickly as possible, but not later than 48 hours after the exposure.</p> <p>(iii) For each employee who must wear a respirator, physical ability to perform the work and use the respirator must be determined as required by WAC 296-62-071.</p> <p>(d) Content of medical screening.</p> <p>(i) Medical screening for employees covered by (a)(i) and (ii) of this subsection shall include:</p> <p>(A) A baseline health questionnaire that includes a comprehensive occupational and health history and is updated annually. Particular emphasis shall be placed on the hematopoietic and reticuloendothelial systems, including exposure to chemicals, in addition to BD, that may have an adverse effect on these systems, the presence of signs and symptoms that might be related to disorders of these systems, and any other information determined by the examining physician or other licensed health care professional to be necessary to evaluate whether the employee is at increased risk of material impairment of health from BD exposure. Health questionnaires shall consist of the sample forms in Appendix C to this section, or be equivalent to those samples;</p>

(B) A complete physical examination, with special emphasis on the liver, spleen, lymph nodes, and skin;

(C) A CBC; and

(D) Any other test which the examining physician or other licensed health care professional deems necessary to evaluate whether the employee may be at increased risk from exposure to BD.

(ii) Medical screening for employees exposed to BD in an emergency situation shall focus on the acute effects of BD exposure and at a minimum include: A CBC within 48 hours of the exposure and then monthly for three months; and a physical examination if the employee reports irritation of the eyes, nose, throat, lungs, or skin, blurred vision, coughing, drowsiness, nausea, or headache. Continued employee participation in the medical screening and surveillance program, beyond these minimum requirements, shall be at the discretion of the physician or other licensed health care professional.

(e) Additional medical evaluations and referrals.

(i) Where the results of medical screening indicate abnormalities of the hematopoietic or reticuloendothelial systems, for which a nonoccupational cause is not readily apparent, the examining physician or other licensed health care professional shall refer the employee to an appropriate specialist for further evaluation and shall make available to the specialist the results of the medical screening.

(ii) The specialist to whom the employee is referred under this subsection shall determine the appropriate content for the medical evaluation, e.g., examinations, diagnostic tests and procedures, etc.

(f) Information provided to the physician or other licensed health care professional. The employer shall provide the following information to the examining physician or other licensed health care professional involved in the evaluation:

(i) A copy of this section including its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's BD exposure;

(iii) The employee's actual or representative BD exposure level during employment tenure, including exposure incurred in an emergency situation;

(iv) A description of pertinent personal protective equipment used or to be used; and

(v) Information, when available, from previous employment-related medical evaluations of the affected employee which is not otherwise available to the physician or other licensed health care professional or the specialist.

(g) The written medical opinion.

(i) For each medical evaluation required by this section, the employer shall ensure that the physician or other licensed health care professional produces a written opinion and provides a copy to the employer and the employee within 15 business days of the evaluation. The written opinion shall be limited to the following information:

(A) The occupationally pertinent results of the medical evaluation;

(B) A medical opinion concerning whether the employee has any detected medical conditions which would place the employee's health at increased risk of material impairment from exposure to BD;

(C) Any recommended limitations upon the employee's exposure to BD; and

(D) A statement that the employee has been informed of the results of the medical evaluation and any medical conditions resulting from BD exposure that require further explanation or treatment.

(ii) The written medical opinion provided to the employer shall not reveal specific records, findings, and diagnoses that have no bearing on the employee's ability to work with BD.

Note: This provision does not negate the ethical obligation of the physician or other licensed health care professional to transmit any other adverse findings directly to the employee.

(h) Medical surveillance.

(i) The employer shall ensure that information obtained from the medical screening program activities is aggregated (with all personal identifiers removed) and periodically reviewed, to ascertain whether the health of the employee population of that employer is adversely affected by exposure to BD.

(ii) Information learned from medical surveillance activities must be disseminated to covered employees, as defined in (a) of this subsection, in a manner that ensures the confidentiality of individual medical information.

(12) Communication of BD hazards to employees.

(a) Hazard communication. The employer shall communicate the hazards associated with BD exposure in accordance with the requirements of the hazard communication standard, WAC 296-62-054.

(b) Employee information and training.

(i) The employer shall provide all employees exposed to BD with information and training in accordance with the requirements of the hazard communication standard, WAC 296-62-054.

(ii) The employer shall institute a training program for all employees who are potentially exposed to BD at or above the action level or the STEL, ensure employee participation in the program and maintain a record of the contents of such program.

(iii) Training shall be provided prior to or at the time of initial assignment to a job potentially involving exposure to BD at or above the action level or STEL and at least annually thereafter.

(iv) The training program shall be conducted in a manner that the employee is able to understand. The employer shall ensure that each employee exposed to BD over the action level or STEL is informed of the following:

(A) The health hazards associated with BD exposure, and the purpose and a description of the medical screening and surveillance program required by this section;

(B) The quantity, location, manner of use, release, and storage of BD and the specific operations that could result in exposure to BD, especially exposures above the PEL or STEL;

(C) The engineering controls and work practices associated with the employee's job assignment, and emergency procedures and personal protective equipment;

(D) The measures employees can take to protect themselves from exposure to BD;

(E) The contents of this standard and its appendices; and

(F) The right of each employee exposed to BD at or above the action level or STEL to obtain:

(I) Medical examinations as required by subsection (10) of this section at no cost to the employee;

(II) The employee's medical records required to be maintained by subsection (13)(c) of this section; and

(III) All air monitoring results representing the employee's exposure to BD and required to be kept by subsection (13)(b) of this section.

(c) Access to information and training materials.

(i) The employer shall make a copy of this standard and its appendices readily available without cost to all affected employees and their designated representatives and shall provide a copy if requested.

(ii) The employer shall provide to the director, or the designated employee representatives, upon request, all materials relating to the employee information and the training program.

(13) Recordkeeping.

(a) Objective data for exemption from initial monitoring.

(i) Where the processing, use, or handling of products or streams made from or containing BD are exempted from other requirements of this section under subsection (1)(b) of this section, or where objective data have been relied on in lieu of initial monitoring under subsection (4)(b)(ii) of this section, the employer shall establish and maintain a record of the objective data reasonably relied upon in support of the exemption.

(ii) This record shall include at least the following information:

(A) The product or activity qualifying for exemption;

(B) The source of the objective data;

(C) The testing protocol, results of testing, and analysis of the material for the release of BD;

(D) A description of the operation exempted and how the data support the exemption; and

(E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(b) Exposure measurements.

(i) The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to BD as prescribed in subsection (4) of this section.

(ii) The record shall include at least the following information:

(A) The date of measurement;

(B) The operation involving exposure to BD which is being monitored;

(C) Sampling and analytical methods used and evidence of their accuracy;

(D) Number, duration, and results of samples taken;

(E) Type of protective devices worn, if any;

(F) Name, Social Security number and exposure of the employees whose exposures are represented; and

(G) The written corrective action and the schedule for completion of this action required by subsection (4)(g)(ii) of this section.

(iii) The employer shall maintain this record for at least 30 years in accordance with WAC 296-62-052.

(c) Medical screening and surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical screening and surveillance under this section.

(ii) The record shall include at least the following information:

(A) The name and Social Security number of the employee;

(B) Physician's or other licensed health care professional's written opinions as described in subsection (11) (e) of this section;

(C) A copy of the information provided to the physician or other licensed health care professional as required by subsection (11)(e) of this section.

(iii) Medical screening and surveillance records shall be maintained for each employee for the duration of employment plus 30 years, in accordance with WAC 296-62-052.

(d) Availability.

(i) The employer, upon written request, shall make all records required to be maintained by this section available for examination and copying to the director.

(ii) Access to records required to be maintained by (a) and (b) of this subsection shall be granted in accordance with WAC 296-62-05209.

(e) Transfer of records.

(i) Whenever the employer ceases to do business, the employer shall transfer records required by this section to the successor employer. The successor employer shall receive and maintain these records. If there is no successor employer, the employer shall notify the director, at least three months prior to disposal, and transmit them to the director if requested by the director within that period.

(ii) The employer shall transfer medical and exposure records as set forth in WAC 296-62-05215.

(14) Dates.

(a) Effective date. This section shall become effective (day, month), 1997.

(b) Start-up dates.

(i) The initial monitoring required under subsection (4)(b) of this section shall be completed immediately or within sixty days of the introduction of BD into the workplace.

(ii) The requirements of subsections (3) through (13) of this section, including feasible work practice controls but not including engineering controls specified in subsection (6)(a) of this section, shall be complied with immediately.

(iii) Engineering controls specified by subsection (6)(a) of this section shall be implemented by February 4, 1999, and the exposure goal program specified in subsection (7) of this section shall be implemented by February 4, 2000.

(15) Appendices.

Appendices A, B, C, D, and F to this section are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

Appendix A. Substance Safety Data Sheet For 1,3-Butadiene (Non-Mandatory)

(1) Substance Identification.

(a) Substance: 1,3-Butadiene (CH₂=CH-CH=CH₂).

(b) Synonyms: 1,3-Butadiene (BD); butadiene; biethylene; bi-vinyl; divinyl; butadiene-1,3; buta-1,3-diene; erythrene; NCI-C50602; CAS-106-99-0.

(c) BD can be found as a gas or liquid.

(d) BD is used in production of styrene-butadiene rubber and polybutadiene rubber for the tire industry. Other uses include copolymer latexes for carpet backing and paper coating, as well as resins and polymers for pipes and automobile and appliance parts. It is also used as an intermediate in the production of such chemicals as fungicides.

(e) Appearance and odor: BD is a colorless, non-corrosive, flammable gas with a mild aromatic odor at standard ambient temperature and pressure.

(f) Permissible exposure: Exposure may not exceed 1 part BD per million parts of air averaged over the 8-hour workday, nor may short-term exposure exceed 5 parts of BD per million parts of air averaged over any 15-minute period in the 8-hour workday.

(2) Health Hazard Data.

(a) BD can affect the body if the gas is inhaled or if the liquid form, which is very cold (cryogenic), comes in contact with the eyes or skin.

(b) Effects of overexposure: Breathing very high levels of BD for a short time can cause central nervous system effects, blurred vision, nausea, fatigue, headache, decreased blood pressure and pulse rate, and unconsciousness. There are no recorded cases of accidental exposures at high levels that have caused death in humans, but this could occur. Breathing lower levels of BD may cause irritation of the eyes, nose, and throat. Skin contact with liquefied BD can cause irritation and frostbite.

(c) Long-term (chronic) exposure: BD has been found to be a potent carcinogen in rodents, inducing neoplastic lesions at multiple target sites in mice and rats. A recent study of BD-exposed workers showed that exposed workers have an increased risk of developing leukemia. The risk of leukemia increases with increased exposure to BD. OSHA has concluded that there is strong evidence that workplace exposure to BD poses an increased risk of death from cancers of the lymphohematopoietic system.

(d) Reporting signs and symptoms: You should inform your supervisor if you develop any of these signs or symptoms and suspect that they are caused by exposure to BD.

(3) Emergency First Aid Procedures.

In the event of an emergency, follow the emergency plan and procedures designated for your work area. If you have been trained in first aid procedures, provide the necessary first aid measures. If necessary, call for additional assistance from co-workers and emergency medical personnel.

(a) Eye and Skin Exposures: If there is a potential that liquefied BD can come in contact with eye or skin, face shields and skin protective equipment must be provided and used. If liquefied BD comes in contact with the eye, immediately flush the eyes with large amounts of water, occasionally lifting the lower and the upper lids. Flush repeatedly. Get medical attention immediately. Contact lenses should not be worn when working with this chemical. In the event of skin contact, which can cause frostbite, remove any contaminated clothing and flush the affected area repeatedly with large amounts of tepid water.

(b) Breathing: If a person breathes in large amounts of BD, move the exposed person to fresh air at once. If breathing has stopped, begin cardiopulmonary resuscitation (CPR) if you have been trained in this procedure. Keep the affected person warm and at rest. Get medical attention immediately.

(c) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, call for help and begin emergency rescue procedures. Use extreme caution so that you do not become a casualty. Understand the plant's emergency rescue procedures and know the locations of rescue equipment before the need arises.

(4) Respirators and Protective Clothing.

(a) Respirators: Good industrial hygiene practices recommend that engineering and work practice controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when these controls fail and need to be supplemented or during brief, non-routine, intermittent exposure. Respirators may also be used in situations involving non-routine work operations which are performed infrequently and in which exposures are limited in duration, and in emergency situations. In some instances cartridge respirator use is allowed, but only with strict time constraints. For example, at exposure below 5 ppm BD, a cartridge (or canister) respirator, either full or half face, may be used, but the cartridge must be replaced at least every 4 hours, and it must be replaced every 3 hours when the exposure is between 5 and 10 ppm.

If the use of respirators is necessary, the only respirators permitted are those that have been approved by the National Institute for Occupational Safety and Health (NIOSH). In addition to respirator selection, a complete respiratory protection program must be instituted which includes regular training, maintenance, fit testing, inspection, cleaning, and evaluation of respirators. If you can smell BD while wearing a respirator, proceed immediately to fresh air, and change cartridge (or canister) before re-entering an area where there is BD exposure. If you experience difficulty in breathing while wearing a respirator, tell your supervisor.

(b) Protective Clothing: Employees should be provided with and required to use impervious clothing, gloves, face shields (eight-inch minimum), and other appropriate protective clothing necessary to prevent the skin from becoming frozen by contact with liquefied BD (or a vessel containing liquid BD).

Employees should be provided with and required to use splash-proof safety goggles where liquefied BD may contact the eyes.

(5) Precautions for Safe Use, Handling, and Storage.

(a) Fire and Explosion Hazards: BD is a flammable gas and can easily form explosive mixtures in air. It has a lower explosive limit of 2%, and an upper explosive limit of 11.5%. It has an autoignition temperature of 420 deg. C (788 deg. F). Its vapor is heavier than air (vapor density, 1.9) and may travel a considerable distance to a source of ignition and flash back. Usually it contains inhibitors to prevent self-polymerization (which is accompanied by evolution of heat) and to

prevent formation of explosive peroxides. At elevated temperatures, such as in fire conditions, polymerization may take place. If the polymerization takes place in a container, there is a possibility of violent rupture of the container.

(b) Hazard: Slightly toxic. Slight respiratory irritant. Direct contact of liquefied BD on skin may cause freeze burns and frostbite.

(c) Storage: Protect against physical damage to BD containers. Outside or detached storage of BD containers is preferred. Inside storage should be in a cool, dry, well-ventilated, noncombustible location, away from all possible sources of ignition. Store cylinders vertically and do not stack. Do not store with oxidizing material.

(d) Usual Shipping Containers: Liquefied BD is contained in steel pressure apparatus.

(e) Electrical Equipment: Electrical installations in Class I hazardous locations, as defined in Article 500 of the National Electrical Code, should be in accordance with Article 501 of the Code. If explosion-proof electrical equipment is necessary, it shall be suitable for use in Group B. Group D equipment may be used if such equipment is isolated in accordance with Section 501-5(a) by sealing all conduit 1/2-inch size or larger. See Venting of Deflagrations (NFPA No. 68, 1994), National Electrical Code (NFPA No. 70, 1996), Static Electricity (NFPA No. 77, 1993), Lightning Protection Systems (NFPA No. 780, 1995), and Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids (NFPA No. 325, 1994).

(f) Fire Fighting: Stop flow of gas. Use water to keep fire-exposed containers cool. Fire extinguishers and quick drenching facilities must be readily available, and you should know where they are and how to operate them.

(g) Spill and Leak: Persons not wearing protective equipment and clothing should be restricted from areas of spills or leaks until clean-up has been completed. If BD is spilled or leaked, the following steps should be taken:

(i) Eliminate all ignition sources.

(ii) Ventilate area of spill or leak.

(iii) If in liquid form, for small quantities, allow to evaporate in a safe manner.

(iv) Stop or control the leak if this can be done without risk. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place and repair the leak or allow the cylinder to empty.

(h) Disposal: This substance, when discarded or disposed of, is a hazardous waste according to Federal regulations (40 CFR part 261). It is listed as hazardous waste number D001 due to its ignitability. The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with 40 CFR parts 262, 263, 264, 268 and 270. Disposal can occur only in properly permitted facilities. Check state and local regulation of any additional requirements as these may be more restrictive than federal laws and regulation.

(i) You should not keep food, beverages, or smoking materials in areas where there is BD exposure, nor should you eat or drink in such areas.

(j) Ask your supervisor where BD is used in your work area and ask for any additional plant safety and health rules.

(6) Medical Requirements.

Your employer is required to offer you the opportunity to participate in a medical screening and surveillance program if you are exposed to BD at concentrations exceeding the action level (0.5 ppm BD as an 8-hour TWA) on 30 days or more a year, or at or above the 8-hr TWA (1 ppm) or STEL (5 ppm for 15 minutes) on 10 days or more a year. Exposure for any part of a day counts. If you have had exposure to BD in the past, but have been transferred to another job, you may still be eligible to participate in the medical screening and surveillance program.

The WISHA rule specifies the past exposures that would qualify you for participation in the program. These past exposures are work histories that suggest the following:

(a) That you have been exposed at or above the PELs on 30 days a year for 10 or more years;

(b) That you have been exposed at or above the action level on 60 days a year for 10 or more years; or

(c) That you have been exposed above 10 ppm on 30 days in any past year.

Additionally, if you are exposed to BD in an emergency situation, you are eligible for a medical examination within 48 hours. The basic medical screening program includes a health questionnaire, physical examination, and blood test. These medical evaluations must be offered to you at a reasonable time and place, and without cost or loss of pay.

(7) Observation of Monitoring.

Your employer is required to perform measurements that are representative of your exposure to BD and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you or your representative must also be provided with, and must wear, the protective clothing and equipment.

(8) Access to Information.

(a) Each year, your employer is required to inform you of the information contained in this appendix. In addition, your employer must instruct you in the proper work practices for using BD, emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to BD. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, he or she is required to inform you of the actions which are being taken to reduce your exposure to within permissible exposure limits and of the schedule to implement these actions.

(c) Your employer is required to keep records of your exposures and medical examinations. These records must be kept by the employer for at least thirty (30) years.

(d) Your employer is required to release your exposure and medical records to you or your representative upon your request.

Appendix B. Substance Technical Guidelines for 1,3-Butadiene (Non-Mandatory)

(1) Physical and Chemical Data.

(a) Substance identification:

(i) Synonyms: 1,3-Butadiene (BD); butadiene; biethylene; divinyl; divinyl; butadiene-1,3; buta-1,3-diene; erythrene; NCI-C50620; CAS-106-99-0.

(ii) Formula: $(CH_2)=CH-CH=CH(2)$.

(iii) Molecular weight: 54.1.

(b) Physical data:

(i) Boiling point (760 mm Hg): -4.7 deg. C (23.5 deg. F).

(ii) Specific gravity (water=1): 0.62 at 20 deg. C (68 deg. F).

(iii) Vapor density (air=1 at boiling point of BD): 1.87.

(iv) Vapor pressure at 20 deg. C (68 deg. F): 910 mm Hg.

(v) Solubility in water, g/100 g water at 20 deg. C (68 deg. F): 0.05.

(vi) Appearance and odor: Colorless, flammable gas with a mildly aromatic odor. Liquefied BD is a colorless liquid with a mildly aromatic odor.

(2) Fire, Explosion, and Reactivity Hazard Data.

(a) Fire:

(i) Flash point: -76 deg. C (-105 deg. F) for take out; liquefied BD; Not applicable to BD gas.

(ii) Stability: A stabilizer is added to the monomer to inhibit formation of polymer during storage. Forms explosive peroxides in air in absence of inhibitor.

(iii) Flammable limits in air, percent by volume: Lower: 2.0; Upper: 11.5.

(iv) Extinguishing media: Carbon dioxide for small fires, polymer or alcohol foams for large fires.

(v) Special fire fighting procedures: Fight fire from protected location or maximum possible distance. Stop flow of gas before extinguishing fire. Use water spray to keep fire-exposed cylinders cool.

(vi) Unusual fire and explosion hazards: BD vapors are heavier than air and may travel to a source of ignition and flash back. Closed containers may rupture violently when heated.

(vii) For purposes of compliance with the requirements of WAC 296-24-330, BD is classified as a flammable gas. For example, 7,500 ppm, approximately one-fourth of the lower flammable limit, would be considered to pose a potential fire and explosion hazard.

(viii) For purposes of compliance with WAC 296-24-585, BD is classified as a Class B fire hazard.

(ix) For purposes of compliance with WAC 296-24-956, locations classified as hazardous due to the presence of BD shall be Class I.

(b) Reactivity:

(i) Conditions contributing to instability: Heat. Peroxides are formed when inhibitor concentration is not maintained at proper level. At elevated temperatures, such as in fire conditions, polymerization may take place.

(ii) Incompatibilities: Contact with strong oxidizing agents may cause fires and explosions. The contacting of crude BD (not BD monomer) with copper and copper alloys may cause formations of explosive copper compounds.

(iii) Hazardous decomposition products: Toxic gases (such as carbon monoxide) may be released in a fire involving BD.

(iv) Special precautions: BD will attack some forms of plastics, rubber, and coatings. BD in storage should be checked for proper inhibitor content, for self-polymerization, and for formation of peroxides when in contact with air and iron. Piping carrying BD may become plugged by formation of rubbery polymer.

(c) Warning Properties:

(i) Odor Threshold: An odor threshold of 0.45 ppm has been reported in The American Industrial Hygiene Association (AIHA) Report, Odor Thresholds for Chemicals with Established Occupational Health Standards. (Ex. 32-28C).

(ii) Eye Irritation Level: Workers exposed to vapors of BD (concentration or purity unspecified) have complained of irritation of eyes, nasal passages, throat, and lungs. Dogs and rabbits exposed experimentally to as much as 6700 ppm for 7 1/2 hours a day for 8 months have developed no histologically demonstrable abnormality of the eyes.

(iii) Evaluation of Warning Properties: Since the mean odor threshold is about half of the 1 ppm PEL, and more than 10-fold below the 5 ppm STEL, most wearers of air purifying respirators should still be able to detect breakthrough before a significant overexposure to BD occurs.

(3) Spill, Leak, and Disposal Procedures.

(a) Persons not wearing protective equipment and clothing should be restricted from areas of spills or leaks until cleanup has been completed. If BD is spilled or leaked, the following steps should be taken:

(i) Eliminate all ignition sources.

(ii) Ventilate areas of spill or leak.

(iii) If in liquid form, for small quantities, allow to evaporate in a safe manner.

(iv) Stop or control the leak if this can be done without risk. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place and repair the leak or allow the cylinder to empty.

(b) Disposal: This substance, when discarded or disposed of, is a hazardous waste according to Federal regulations (40 CFR part 261). It is listed by the EPA as hazardous waste number D001 due to its ignitability. The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with 40 CFR parts 262, 263, 264, 268 and 270. Disposal can occur only in properly permitted facilities. Check state and local regulations for any additional requirements because these may be more restrictive than federal laws and regulations.

(4) Monitoring and Measurement Procedures.

(a) Exposure above the Permissible Exposure Limit (8-hr TWA) or Short-Term Exposure Limit (STEL):

(i) 8-hr TWA exposure evaluation: Measurements taken for the purpose of determining employee exposure under this standard are best taken with consecutive samples covering the full shift. Air samples must be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee).

(ii) STEL exposure evaluation: Measurements must represent 15 minute exposures associated with operations most likely to exceed the STEL in each job and on each shift.

(iii) Monitoring frequencies: Table 1 gives various exposure scenarios and their required monitoring frequen-

cies, as required by the final standard for occupational exposure to butadiene.

Table 1. — Five Exposure Scenarios and Their Associated Monitoring Frequencies

Action Level	8-hr TWA	STEL	Required Monitoring Activity
—*	—	—	No 8-hr TWA or STEL monitoring required.
+*	—	—	No STEL monitoring required. Monitor 8-hr TWA annually.
+	—	—	No STEL monitoring required. Periodic monitoring 8-hr TWA, in accordance with (4)(c)(iii).**
+	+	+	Periodic monitoring 8-hr TWA, in accordance with (4)(c)(iii)**. Periodic monitoring STEL in accordance with (4)(c)(iii).
+	—	+	Periodic monitoring STEL, in accordance with (4)(c)(iii). Monitor 8-hr TWA annually.

Footnote (*) Exposure Scenario, Limit Exceeded: += Yes, - = No.

Footnote (**) The employer may decrease the frequency of exposure monitoring to annually when at least 2 consecutive measurements taken at least 7 days apart show exposures to be below the 8-hr TWA, but at or above the action level.

(iv) Monitoring techniques: Appendix D describes the validated method of sampling and analysis which has been tested by OSHA for use with BD. The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his or her unique field conditions. The standard requires that the method of monitoring must be accurate, to a 95 percent confidence level, to plus or minus 25 percent for concentrations of BD at or above 1 ppm, and to plus or minus 35 percent for concentrations below 1 ppm.

(5) Personal Protective Equipment.

(a) Employees should be provided with and required to use impervious clothing, gloves, face shields (eight-inch minimum), and other appropriate protective clothing necessary to prevent the skin from becoming frozen from contact with liquid BD.

(b) Any clothing which becomes wet with liquid BD should be removed immediately and not re-worn until the butadiene has evaporated.

(c) Employees should be provided with and required to use splash proof safety goggles where liquid BD may contact the eyes.

(6) Housekeeping and Hygiene Facilities.

For purposes of complying with WAC 296-24-120 (Part B-1 Sanitation), the following items should be emphasized:

(a) The workplace should be kept clean, orderly, and in a sanitary condition.

(b) Adequate washing facilities with hot and cold water are to be provided and maintained in a sanitary condition.

(7) Additional Precautions.

(a) Store BD in tightly closed containers in a cool, well-ventilated area and take all necessary precautions to avoid any explosion hazard.

(b) Nonsparking tools must be used to open and close metal containers. These containers must be effectively grounded.

(c) Do not incinerate BD cartridges, tanks or other containers.

(d) Employers must advise employees of all areas and operations where exposure to BD might occur.

Appendix C. Medical Screening and Surveillance for 1,3-Butadiene (Nonmandatory)

(1) Basis for Medical Screening and Surveillance Requirements.

(a) Route of Entry Inhalation.

(b) Toxicology.

Inhalation of BD has been linked to an increased risk of cancer, damage to the reproductive organs, and fetotoxicity. Butadiene can be converted via oxidation to epoxybutene and diepoxybutane, two genotoxic metabolites that may play a role in the expression of BD's toxic effects. BD has been tested for carcinogenicity in mice and rats. Both species responded to BD exposure by developing cancer at multiple primary organ sites. Early deaths in mice were caused by malignant lymphomas, primarily lymphocytic type, originating in the thymus.

Mice exposed to BD have developed ovarian or testicular atrophy. Sperm head morphology tests also revealed abnormal sperm in mice exposed to BD; lethal mutations were found in a dominant lethal test. In light of these results in animals, the possibility that BD may adversely affect the reproductive systems of male and female workers must be considered.

Additionally, anemia has been observed in animals exposed to butadiene. In some cases, this anemia appeared to be a primary response to exposure; in other cases, it may have been secondary to a neoplastic response.

(c) Epidemiology.

Epidemiologic evidence demonstrates that BD exposure poses an increased risk of leukemia. Mild alterations of hematologic parameters have also been observed in synthetic rubber workers exposed to BD.

(2) Potential Adverse Health Effects.

(a) Acute.

Skin contact with liquid BD causes characteristic burns or frostbite. BD in gaseous form can irritate the eyes, nasal

passages, throat, and lungs. Blurred vision, coughing, and drowsiness may also occur. Effects are mild at 2,000 ppm and pronounced at 8,000 ppm for exposures occurring over the full workshift.

At very high concentrations in air, BD is an anesthetic, causing narcosis, respiratory paralysis, unconsciousness, and death. Such concentrations are unlikely, however, except in an extreme emergency because BD poses an explosion hazard at these levels.

(b) Chronic.

The principal adverse health effects of concern are BD-induced lymphoma, leukemia and potential reproductive toxicity. Anemia and other changes in the peripheral blood cells may be indicators of excessive exposure to BD.

(c) Reproductive.

Workers may be concerned about the possibility that their BD exposure may be affecting their ability to procreate a healthy child. For workers with high exposures to BD, especially those who have experienced difficulties in conceiving, miscarriages, or stillbirths, appropriate medical and laboratory evaluation of fertility may be necessary to determine if BD is having any adverse effect on the reproductive system or on the health of the fetus.

(3) Medical Screening Components At-A-Glance.

(a) Health Questionnaire.

The most important goal of the health questionnaire is to elicit information from the worker regarding potential signs or symptoms generally related to leukemia or other blood abnormalities. Therefore, physicians or other licensed health care professionals should be aware of the presenting symptoms and signs of lymphohematopoietic disorders and cancers, as well as the procedures necessary to confirm or exclude such diagnoses. Additionally, the health questionnaire will assist with the identification of workers at greatest risk of developing leukemia or adverse reproductive effects from their exposures to BD.

Workers with a history of reproductive difficulties or a personal or family history of immune deficiency syndromes, blood dyscrasias, lymphoma, or leukemia, and those who are or have been exposed to medicinal drugs or chemicals known to affect the hematopoietic or lymphatic systems may be at higher risk from their exposure to BD. After the initial administration, the health questionnaire must be updated annually.

(b) Complete Blood Count (CBC).

The medical screening and surveillance program requires an annual CBC, with differential and platelet count, to be provided for each employee with BD exposure. This test is to be performed on a blood sample obtained by phlebotomy of the venous system or, if technically feasible, from a fingerstick sample of capillary blood. The sample is to be analyzed by an accredited laboratory.

Abnormalities in a CBC may be due to a number of different etiologies. The concern for workers exposed to BD includes, but is not limited to, timely identification of lymphohematopoietic cancers, such as leukemia and non-Hodgkin's lymphoma. Abnormalities of portions of the CBC are identified by comparing an individual's results to those of an established range of normal values for males and females. A substantial change in any individual employee's CBC may

also be viewed as "abnormal" for that individual even if all measurements fall within the population-based range of normal values. It is suggested that a flowsheet for laboratory values be included in each employee's medical record so that comparisons and trends in annual CBCs can be easily made.

A determination of the clinical significance of an abnormal CBC shall be the responsibility of the examining physician, other licensed health care professional, or medical specialist to whom the employee is referred. Ideally, an abnormal CBC should be compared to previous CBC measurements for the same employee, when available. Clinical common sense may dictate that a CBC value that is very slightly outside the normal range does not warrant medical concern. A CBC abnormality may also be the result of a temporary physical stressor, such as a transient viral illness, blood donation, or menorrhagia, or laboratory error. In these cases, the CBC should be repeated in a timely fashion, i.e., within 6 weeks, to verify that return to the normal range has occurred. A clinically significant abnormal CBC should result in removal of the employee from further exposure to BD. Transfer of the employee to other work duties in a BD-free environment would be the preferred recommendation.

(c) Physical Examination.

The medical screening and surveillance program requires an initial physical examination for workers exposed to BD; this examination is repeated once every three years. The initial physical examination should assess each worker's baseline general health and rule out clinical signs of medical conditions that may be caused by or aggravated by occupational BD exposure. The physical examination should be directed at identification of signs of lymphohematopoietic disorders, including lymph node enlargement, splenomegaly, and hepatomegaly.

Repeated physical examinations should update objective clinical findings that could be indicative of interim development of a lymphohematopoietic disorder, such as lymphoma, leukemia, or other blood abnormality. Physical examinations may also be provided on an as needed basis in order to follow up on a positive answer on the health questionnaire, or in response to an abnormal CBC. Physical examination of workers who will no longer be working in jobs with BD exposure are intended to rule out lymphohematopoietic disorders.

The need for physical examinations for workers concerned about adverse reproductive effects from their exposure to BD should be identified by the physician or other licensed health care professional and provided accordingly. For these workers, such consultations and examinations may relate to developmental toxicity and reproductive capacity.

Physical examination of workers acutely exposed to significant levels of BD should be especially directed at the respiratory system, eyes, sinuses, skin, nervous system, and any region associated with particular complaints. If the worker has received a severe acute exposure, hospitalization may be required to assure proper medical management. Since this type of exposure may place workers at greater risk of blood abnormalities, a CBC must be obtained within 48 hours and repeated at one, two, and three months.

Appendix D: Sampling and Analytical Method for 1,3-Butadiene (Non-Mandatory)

OSHA Method No.: 56.

Matrix: Air.

Target concentration: 1 ppm (2.21 mg/m(3)).

Procedure: Air samples are collected by drawing known volumes of air through sampling tubes containing charcoal adsorbent which has been coated with 4-tert-butylcatechol. The samples are desorbed with carbon disulfide and then analyzed by gas chromatography using a flame ionization detector.

Recommended sampling rate and air volume: 0.05 L/min and 3 L.

Detection limit of the overall procedure: 90 ppb (200 ug/m(3)) (based on 3 L air volume).

Reliable quantitation limit: 155 ppb (343 ug/m(3)) (based on 3 L air volume).

Standard error of estimate at the target concentration: 6.5%.

Special requirements: The sampling tubes must be coated with 4-tert-butylcatechol. Collected samples should be stored in a freezer.

Status of method: A sampling and analytical method has been subjected to the established evaluation procedures of the Organic Methods Evaluation Branch, OSHA Analytical Laboratory, Salt Lake City, Utah 84165.

(1) Background.

This work was undertaken to develop a sampling and analytical procedure for BD at 1 ppm. The current method recommended by OSHA for collecting BD uses activated coconut shell charcoal as the sampling medium (Ref. 5.2). This method was found to be inadequate for use at low BD levels because of sample instability.

The stability of samples has been significantly improved through the use of a specially cleaned charcoal which is coated with 4-tert-butylcatechol (TBC). TBC is a polymerization inhibitor for BD (Ref. 5.3).

(a) Toxic effects.

Symptoms of human exposure to BD include irritation of the eyes, nose and throat. It can also cause coughing, drowsiness and fatigue. Dermatitis and frostbite can result from skin exposure to liquid BD. (Ref. 5.1)

NIOSH recommends that BD be handled in the workplace as a potential occupational carcinogen. This recommendation is based on two inhalation studies that resulted in cancers at multiple sites in rats and in mice. BD has also demonstrated mutagenic activity in the presence of a liver microsomal activating system. It has also been reported to have adverse reproductive effects. (Ref. 5.1)

(b) Potential workplace exposure.

About 90% of the annual production of BD is used to manufacture styrene-butadiene rubber and Polybutadiene rubber. Other uses include: Polychloroprene rubber, acrylonitrile butadiene-styrene resins, nylon intermediates, styrene-butadiene latexes, butadiene polymers, thermoplastic elastomers, nitrile resins, methyl methacrylate-butadiene styrene resins and chemical intermediates. (Ref. 5.1)

(c) Physical properties (Ref. 5.1).

CAS No.: 106-99-0

Molecular weight: 54.1

Appearance: Colorless gas

Boiling point: -4.41 deg. C (760 mm Hg)

Freezing point: -108.9 deg. C

Vapor pressure: 2 atm (a) 15.3 deg. C; 5 atm (a) 47 deg.

C

Explosive limits: 2 to 11.5% (by volume in air)

Odor threshold: 0.45 ppm

Structural formula: H(2)C:CHCH:CH(2)

Synonyms: BD; biethylene; bivinylyl; butadiene; divinyl; buta-1,3-diene; alpha-gamma-butadiene; erythrene; NCI-C50602; pyrrolylene; vinyl ethylene.

(d) Limit defining parameters.

The analyte air concentrations listed throughout this method are based on an air volume of 3 L and a desorption volume of 1 mL. Air concentrations listed in ppm are referenced to 25 deg. C and 760 mm Hg.

(e) Detection limit of the analytical procedure.

The detection limit of the analytical procedure was 304 pg per injection. This was the amount of BD which gave a response relative to the interferences present in a standard.

(f) Detection limit of the overall procedure.

The detection limit of the overall procedure was 0.60 ug per sample (90 ppb or 200 ug/m(3)). This amount was determined graphically. It was the amount of analyte which, when spiked on the sampling device, would allow recovery approximately equal to the detection limit of the analytical procedure.

(g) Reliable quantitation limit.

The reliable quantitation limit was 1.03 ug per sample (155 ppb or 343 ug/m(3)). This was the smallest amount of analyte which could be quantitated within the limits of a recovery of at least 75% and a precision (+/- 1.96 SD) of +/- 25% or better.

(h) Sensitivity.(1)

Footnote (1)

The reliable quantitation limit and detection limits reported in the method are based upon optimization of the instrument for the smallest possible amount of analyte. When the target concentration of an analyte is exceptionally higher than these limits, they may not be attainable at the routine operation parameters.

The sensitivity of the analytical procedure over a concentration range representing 0.6 to 2 times the target concentration, based on the recommended air volume, was 387 area units per ug/mL. This value was determined from the slope of the calibration curve. The sensitivity may vary with the particular instrument used in the analysis.

(i) Recovery.

The recovery of BD from samples used in storage tests remained above 77% when the samples were stored at ambient temperature and above 94% when the samples were stored at refrigerated temperature. These values were determined from regression lines which were calculated from the storage data. The recovery of the analyte from the collection device must be at least 75% following storage.

(j) Precision (analytical method only).

The pooled coefficient of variation obtained from replicate determinations of analytical standards over the range of 0.6 to 2 times the target concentration was 0.011.

(k) Precision (overall procedure).

The precision at the 95% confidence level for the refrigerated temperature storage test was +/- 12.7%. This value

includes an additional +/- 5% for sampling error. The overall procedure must provide results at the target concentrations that are +/- 25% at the 95% confidence level.

(l) Reproducibility.

Samples collected from a controlled test atmosphere and a draft copy of this procedure were given to a chemist unassociated with this evaluation. The average recovery was 97.2% and the standard deviation was 6.2%.

(2) Sampling procedure.

(a) Apparatus. Samples are collected by use of a personal sampling pump that can be calibrated to within +/- 5% of the recommended 0.05 L/min sampling rate with the sampling tube in line.

(b) Samples are collected with laboratory prepared sampling tubes. The sampling tube is constructed of silane-treated glass and is about 5-cm long. The ID is 4 mm and the OD is 6 mm. One end of the tube is tapered so that a glass wool end plug will hold the contents of the tube in place during sampling. The opening in the tapered end of the sampling tube is at least one-half the ID of the tube (2 mm). The other end of the sampling tube is open to its full 4-mm ID to facilitate packing of the tube. Both ends of the tube are fire-polished for safety. The tube is packed with 2 sections of pretreated charcoal which has been coated with TBC. The tube is packed with a 50-mg backup section, located nearest the tapered end, and with a 100-mg sampling section of charcoal. The two sections of coated adsorbent are separated and retained with small plugs of silanized glass wool. Following packing, the sampling tubes are sealed with two 7/32 inch OD plastic end caps. Instructions for the pretreatment and coating of the charcoal are presented in Section 4.1 of this method.

(c) Reagents.

None required.

(d) Technique.

(i) Properly label the sampling tube before sampling and then remove the plastic end caps.

(ii) Attach the sampling tube to the pump using a section of flexible plastic tubing such that the larger front section of the sampling tube is exposed directly to the atmosphere. Do not place any tubing ahead of the sampling tube. The sampling tube should be attached in the worker's breathing zone in a vertical manner such that it does not impede work performance.

(iii) After sampling for the appropriate time, remove the sampling tube from the pump and then seal the tube with plastic end caps. Wrap the tube lengthwise.

(iv) Include at least one blank for each sampling set. The blank should be handled in the same manner as the samples with the exception that air is not drawn through it.

(v) List any potential interferences on the sample data sheet.

(vi) The samples require no special shipping precautions under normal conditions. The samples should be refrigerated if they are to be exposed to higher than normal ambient temperatures. If the samples are to be stored before they are shipped to the laboratory, they should be kept in a freezer. The samples should be placed in a freezer upon receipt at the laboratory.

(e) Breakthrough.

(Breakthrough was defined as the relative amount of analyte found on the backup section of the tube in relation to the total amount of analyte collected on the sampling tube. Five-percent breakthrough occurred after sampling a test atmosphere containing 2.0 ppm BD for 90 min. at 0.05 L/min. At the end of this time 4.5 L of air had been sampled and 20.1 ug of the analyte was collected. The relative humidity of the sampled air was 80% at 23 deg. C.)

Breakthrough studies have shown that the recommended sampling procedure can be used at air concentrations higher than the target concentration. The sampling time, however, should be reduced to 45 min. if both the expected BD level and the relative humidity of the sampled air are high.

(f) Desorption efficiency.

The average desorption efficiency for BD from TBC coated charcoal over the range from 0.6 to 2 times the target concentration was 96.4%. The efficiency was essentially constant over the range studied.

(g) Recommended air volume and sampling rate.

(h) The recommended air volume is 3 L.

(i) The recommended sampling rate is 0.05 L/min. for 1 hour.

(j) Interferences.

There are no known interferences to the sampling method.

(k) Safety precautions.

(i) Attach the sampling equipment to the worker in such a manner that it will not interfere with work performance or safety.

(ii) Follow all safety practices that apply to the work area being sampled.

(3) Analytical procedure.

(a) Apparatus.

(i) A gas chromatograph (GC), equipped with a flame ionization detector (FID).(2)

Footnote (2) A Hewlett-Packard Model 5840A GC was used for this evaluation. Injections were performed using a Hewlett-Packard Model 7671A automatic sampler.

(ii) A GC column capable of resolving the analytes from any interference.(3)

Footnote (3) A 20-ft x 1/8-inch OD stainless steel GC column containing 20% FFAP on 80/100 mesh Chromabsorb W-AW-DMCS was used for this evaluation.

(iii) Vials, glass 2-mL with Teflon-lined caps.

(iv) Disposable Pasteur-type pipets, volumetric flasks, pipets and syringes for preparing samples and standards, making dilutions and performing injections.

(b) Reagents.

(i) Carbon disulfide.(4)

Footnote (4) Fisher Scientific Company A.C.S. Reagent Grade solvent was used in this evaluation.

The benzene contaminant that was present in the carbon disulfide was used as an internal standard (ISTD) in this evaluation.

(ii) Nitrogen, hydrogen and air, GC grade.

(iii) BD of known high purity.(5)

Footnote (5) Matheson Gas Products, CP Grade 1,3-butadiene was used in this study.

(c) Standard preparation.

(i) Prepare standards by diluting known volumes of BD gas with carbon disulfide. This can be accomplished by injecting the appropriate volume of BD into the headspace above the 1-mL of carbon disulfide contained in sealed 2-mL vial. Shake the vial after the needle is removed from the septum.(6)

Footnote (6) A standard containing 7.71 ug/mL (at ambient temperature and pressure) was prepared by diluting 4 uL of the gas with 1-mL of carbon disulfide.

(ii) The mass of BD gas used to prepare standards can be determined by use of the following equations:

$$MV = (760/BP)(273+t)/(273)(22.41)$$

Where:

MV = ambient molar volume

BP = ambient barometric pressure

T = ambient temperature

ug/uL = 54.09/MV

ug/standard = (ug/uL)(uL) BD used to prepare the standard

(d) Sample preparation.

(i) Transfer the 100-mg section of the sampling tube to a 2-mL vial. Place the 50-mg section in a separate vial. If the glass wool plugs contain a significant amount of charcoal, place them with the appropriate sampling tube section.

(ii) Add 1-mL of carbon disulfide to each vial.

(iii) Seal the vials with Teflon-lined caps and then allow them to desorb for one hour. Shake the vials by hand vigorously several times during the desorption period.

(iv) If it is not possible to analyze the samples within 4 hours, separate the carbon disulfide from the charcoal, using a disposable Pasteur-type pipet, following the one hour. This separation will improve the stability of desorbed samples.

(v) Save the used sampling tubes to be cleaned and repacked with fresh adsorbent.

(e) Analysis.

(i) GC Conditions.

Column temperature: 95 deg. C

Injector temperature: 180 deg. C

Detector temperature: 275 deg. C

Carrier gas flow rate: 30 mL/min.

Injection volume: 0.80 uL

GC column: 20-ft x 1/8-in OD stainless steel GC column containing 20%

FFAP on 80/100 Chromabsorb W-AW-DMCS.

(ii) Chromatogram. See Section 4.2.

(iii) Use a suitable method, such as electronic or peak heights, to measure detector response.

(iv) Prepare a calibration curve using several standard solutions of different concentrations. Prepare the calibration curve daily. Program the integrator to report the results in ug/mL.

(v) Bracket sample concentrations with standards.

(f) Interferences (analytical).

(i) Any compound with the same general retention time as the analyte and which also gives a detector response is a potential interference. Possible interferences should be reported by the industrial hygienist to the laboratory with submitted samples.

(ii) GC parameters (temperature, column, etc.) may be changed to circumvent interferences.

(iii) A useful means of structure designation is GC/MS. It is recommended that this procedure be used to confirm samples whenever possible.

(g) Calculations.

(i) Results are obtained by use of calibration curves. Calibration curves are prepared by plotting detector response against concentration for each standard. The best line through the data points is determined by curve fitting.

(ii) The concentration, in ug/mL, for a particular sample is determined by comparing its detector response to the calibration curve. If any analyte is found on the backup section, this amount is added to the amount found on the front section. Blank corrections should be performed before adding the results together.

(iii) The BD air concentration can be expressed using the following equation:

$$\text{mg/m}^3 = (A)(B)/(C)(D)$$

Where:

A = ug/mL from Section 3.7.2

B = volume

C = L of air sampled

D = efficiency

(iv) The following equation can be used to convert results in mg/m³ to ppm:

$$\text{ppm} = (\text{mg/m}^3)(24.46)/54.09$$

Where:

mg/m³ = result from Section 3.7.3.

24.46 = molar volume of an ideal gas at 760 mm Hg and 25 deg. C.

(h) Safety precautions (analytical).

(i) Avoid skin contact and inhalation of all chemicals.

(ii) Restrict the use of all chemicals to a fume hood whenever possible.

(iii) Wear safety glasses and a lab coat in all laboratory areas.

(4) Additional Information.

(a) A procedure to prepare specially cleaned charcoal coated with TBC.

(i) Apparatus.

(A) Magnetic stirrer and stir bar.

(B) Tube furnace capable of maintaining a temperature of 700 deg. C and equipped with a quartz tube that can hold 30 g of charcoal.(8)

Footnote (8) A Lindberg Type 55035 Tube furnace was used in this evaluation.

(C) A means to purge nitrogen gas through the charcoal inside the quartz tube.

(D) Water bath capable of maintaining a temperature of 60 deg. C.

(E) Miscellaneous laboratory equipment: One-liter vacuum flask, 1-L Erlenmeyer flask, 350-M1 Buchner funnel with a coarse fitted disc, 4-oz brown bottle, rubber stopper, Teflon tape etc.

(ii) Reagents.

(A) Phosphoric acid, 10% by weight, in water.(9)

Footnote (9) Baker Analyzed Reagent grade was diluted with water for use in this evaluation.

(B) 4-tert-Butylcatechol (TBC).(10)

Footnote (10) The Aldrich Chemical Company 99% grade was used in this evaluation.

(C) Specially cleaned coconut shell charcoal, 20/40 mesh.(11)

Footnote (11) Specially cleaned charcoal was obtained from Supelco, Inc. for use in this evaluation. The cleaning process used by Supelco is proprietary.

(D) Nitrogen gas, GC grade.
(iii) Procedure.

Weigh 30g of charcoal into a 500-mL Erlenmeyer flask. Add about 250 mL of 10% phosphoric acid to the flask and then swirl the mixture. Stir the mixture for 1 hour using a magnetic stirrer. Filter the mixture using a fitted Buchner funnel. Wash the charcoal several times with 250-mL portions of deionized water to remove all traces of the acid. Transfer the washed charcoal to the tube furnace quartz tube. Place the quartz tube in the furnace and then connect the nitrogen gas purge to the tube. Fire the charcoal to 700 deg. C. Maintain that temperature for at least 1 hour. After the charcoal has cooled to room temperature, transfer it to a tared beaker. Determine the weight of the charcoal and then add an amount of TBC which is 10% of the charcoal, by weight.

CAUTION-TBC is toxic and should only be handled in a fume hood while wearing gloves.

Carefully mix the contents of the beaker and then transfer the mixture to a 4-oz bottle. Stopper the bottle with a clean rubber stopper which has been wrapped with Teflon tape. Clamp the bottle in a water bath so that the water level is above the charcoal level. Gently heat the bath to 60 deg. C and then maintain that temperature for 1 hour. Cool the charcoal to room temperature and then transfer the coated charcoal to a suitable container.

The coated charcoal is now ready to be packed into sampling tubes. The sampling tubes should be stored in a sealed container to prevent contamination. Sampling tubes should be stored in the dark at room temperature. The sampling tubes should be segregated by coated adsorbent lot number.

(b) Chromatograms.

The chromatograms were obtained using the recommended analytical method. The chart speed was set at 1 cm/min. for the first three min. and then at 0.2 cm/min. for the time remaining in the analysis.

The peak which elutes just before BD is a reaction product between an impurity on the charcoal and TBC. This peak is always present, but it is easily resolved from the analyte. The peak which elutes immediately before benzene is an oxidation product of TBC.

(5) References.

(a) "Current Intelligence Bulletin 41, 1,3-Butadiene", U.S. Dept. of Health and Human Services, Public Health Service, Center for Disease Control, NIOSH.

(b) "NIOSH Manual of Analytical Methods", 2nd ed.; U.S. Dept. of Health Education and Welfare, National Institute for Occupational Safety and Health: Cincinnati, OH, 1977, Vol. 2, Method No. S91 DHEW (NIOSH) Publ. (U.S.), No. 77-157-B.

(c) Hawley, G.C., Ed. "The Condensed Chemical Dictionary", 8th ed.; Van Nostrand Rienhold Company: New York, 1971; 139.5.4. Chem. Eng. News (June 10, 1985), (63), 22-66.

Appendix E: Reserved.

APPENDIX F, MEDICAL QUESTIONNAIRES, (Non-mandatory)

1,3-Butadiene (BD) Initial Health Questionnaire

DIRECTIONS:

You have been asked to answer the questions on this form because you work with BD (butadiene). These questions are about your work, medical history, and health concerns. Please do your best to answer all of the questions. If you need help, please tell the doctor or health care professional who reviews this form.

This form is a confidential medical record. Only information directly related to your health and safety on the job may be given to your employer. Personal health information will not be given to anyone without your consent.

Date: _____

Name: _____ SSN ___/___/___

Last First MI

Job Title: _____

Company's Name: _____

Supervisor's Name: _____

Supervisor's Phone No.: () ___-____

Work History

1. Please list all jobs you have had in the past, starting with the job you have now and moving back in time to your first job. (For more space, write on the back of this page.)

Main Job Duty

Year

Company Name

City, State

Chemicals

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

2. Please describe what you do during a typical work day. Be sure to tell about your work with BD.

3. Please check any of these chemicals that you work with now or have worked with in the past:

- benzene _____
- glues _____
- toluene _____
- inks, dyes _____
- other solvents, grease cutters _____
- insecticides (like DDT, lindane, etc.) _____
- paints, varnishes, thinners, strippers _____
- dusts _____
- carbon tetrachloride ("carbon tet") _____
- arsine _____
- carbon disulfide _____
- lead _____
- cement _____
- petroleum products _____
- nitrites _____

4. Please check the protective clothing or equipment you use at the job you have now:

- gloves _____
- coveralls _____
- respirator _____
- dust mask _____
- safety glasses, goggles _____

Please circle your answer.

- 5. Does your protective clothing or equipment fit you properly? yes no
- 6. Have you ever made changes in your protective clothing or equipment to make it fit better? yes no
- 7. Have you been exposed to BD when you were not wearing protective clothing or equipment? yes no
- 8. Where do you eat, drink and/or smoke when you are at work? (Please check all that apply.)
 - Cafeteria/restaurant/snack bar _____
 - Break room/employee lounge _____
 - Smoking lounge _____
 - At my work station _____

Please circle your answer.

- 9. Have you been exposed to radiation (like x-rays or nuclear material) at the job you have now or at past jobs? yes no
- 10. Do you have any hobbies that expose you to dusts or chemicals (including paints, glues, etc.)? yes no
- 11. Do you have any second or side jobs? yes no

If yes, what are your duties there?

- 12. Were you in the military? yes no

If yes, what did you do in the military?

Family Health History

1. In the FAMILY MEMBER column, across from the disease name, write which family member, if any, had the disease.

DISEASE	FAMILY MEMBER
Cancer	
Lymphoma	
Sickle Cell Disease or Trait	
Immune Disease	
Leukemia	
Anemia	

2. Please fill in the following information about family health

- Relative _____
- Alive? _____
- Age at Death? _____
- Cause of Death? _____
- Father _____
- Mother _____
- Brother/Sister _____
- Brother/Sister _____
- Brother/Sister _____

Personal Health History

Birth Date ___/___/___ Age ___ Sex ___ Height ___ Weight ___

Please circle your answer.

- 1. Do you smoke any tobacco products? yes no
- 2. Have you ever had any kind of surgery or operation?
 - yes no
 - If yes, what type of surgery: _____
 - _____
 - _____

- 3. Have you ever been in the hospital for any other reasons? yes no

If yes, please describe the reason _____

- 4. Do you have any on-going or current medical problems or conditions? yes no

If yes, please describe: _____

- 5. Do you now have or have you ever had any of the following? Please check all that apply to you.
 - unexplained fever _____
 - anemia ("low blood") _____
 - HIV/AIDS _____
 - weakness _____
 - sickle cell _____
 - miscarriage _____

- skin rash _____
- bloody stools _____
- leukemia/lymphoma _____
- neck mass/swelling _____
- wheezing _____
- yellowing of skin _____
- bruising easily _____
- lupus _____
- weight loss _____
- kidney problems _____
- enlarged lymph nodes _____
- liver disease _____
- cancer _____
- infertility _____
- drinking problems _____
- thyroid problems _____
- night sweats _____
- chest pain _____
- still birth _____
- eye redness _____
- lumps you can feel _____
- child with birth defect _____
- autoimmune disease _____
- overly tired _____
- lung problems _____
- rheumatoid arthritis _____
- mononucleosis ("mono") _____
- nagging cough _____

Please circle your answer.

6. Do you have any symptoms or health problems that you think may be related to your work with BD? yes no

If yes, please describe: _____

7. Have any of your co-workers had similar symptoms or problems? yes no don't know

If yes, please describe: _____

8. Do you notice any irritation of your eyes, nose, throat, lungs, or skin when working with BD? yes no

9. Do you notice any blurred vision, coughing, drowsiness, nausea, or headache when working with BD? yes no

10. Do you take any medications (including birth control or over-the-counter)? yes no

If yes, please list: _____

11. Are you allergic to any medication, food, or chemicals? yes no

If yes, please list: _____

12. Do you have any health conditions not covered by this questionnaire that you think are affected by your work with BD? yes no

If yes, please explain: _____

13. Did you understand all the questions? yes no

Signature _____

1,3-Butadiene (BD) Health Update Questionnaire

DIRECTIONS:

You have been asked to answer the questions on this form because you work with BD (butadiene). These questions are about your work, medical history, and health concerns. Please do your best to answer all of the questions. If you need help, please tell the doctor or health care professional who reviews this form.

This form is a confidential medical record. Only information directly related to your health and safety on the job may be given to your employer. Personal health information will not be given to anyone without your consent.

Date: _____

Name: _____ SSN _/ _/ _
Last First MI

Job Title: _____

Company's Name: _____

Supervisor's Name: _____

Supervisor's Phone No.: () ___-___

1. Please describe any NEW duties that you have at your job. _____

2. Please describe any additional job duties you have: _____

Please circle your answer.

3. Are you exposed to any other chemicals in your work since the last time you were evaluated for exposure to BD? yes no

If yes, please list what they are: _____

4. Does your personal protective equipment and clothing fit you properly? yes no

5. Have you made changes in this equipment or clothing to make it fit better? yes no

6. Have you been exposed to BD when you were not wearing protective clothing or equipment? yes no

7. Are you exposed to any NEW chemicals at home or while working on hobbies? yes no

If yes, please list what they are: _____

8. Since your last BD health evaluation, have you started working any new second or side jobs? yes no

If yes, what are your duties there? _____

Personal Health History

1. What is your current weight? ____ pounds

2. Have you been diagnosed with any new medical conditions or illness since your last evaluation? yesno

If yes, please tell what they are: _____

3. Since your last evaluation, have you been in the hospital for any illnesses, injuries, or surgery? yes no

If yes, please describe: _____

4. Do you have any of the following? Please place a check for all that apply to you.

- unexplained fever _____
- anemia ("low blood") _____
- HIV/AIDS _____
- weakness _____
- sickle cell _____
- miscarriage _____
- skin rash _____
- bloody stools _____
- leukemia/lymphoma _____
- neck mass/swelling _____
- wheezing _____
- yellowing of skin _____
- bruising easily _____
- lupus _____
- weight loss _____
- kidney problems _____
- enlarged lymph nodes _____
- liver disease _____
- cancer _____
- infertility _____
- drinking problems _____
- thyroid problems _____
- night sweats _____
- chest pain _____
- still birth _____

- eye redness _____
- lumps you can feel _____
- child with birth defect _____
- autoimmune disease _____
- overly tired _____
- lung problems _____
- rheumatoid arthritis _____
- mononucleosis ("mono") _____
- nagging cough _____

Please circle your answer.

5. Do you have any symptoms or health problems that you think may be related to your work with BD? yes no

If yes, please describe: _____

6. Have any of your co-workers had similar symptoms or problems? yes no don't know

If yes, please describe: _____

7. Do you notice any irritation of your eyes, nose, throat, lungs, or skin when working with BD? yes no

8. Do you notice any blurred vision, coughing, drowsiness, nausea, or headache when working with BD? yes no

9. Have you been taking any NEW medications (including birth control or over-the-counter)? yes no

If yes, please list: _____

10. Have you developed any new allergies to medications, foods, or chemicals? yes no

If yes, please list: _____

11. Do you have any health conditions not covered by this questionnaire that you think are affected by your work with BD? yes no

If yes, please explain: _____

12. Do you understand all the questions? yes no

Signature _____

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07460, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-62-07460, filed 9/5/97, effective 11/5/97.]

WAC 296-62-07470 Methylene chloride. This occupational health standard establishes requirements for employers to control occupational exposure to methylene chloride (MC). Employees exposed to MC are at increased risk of developing cancer, adverse effects on the heart, central ner-

vous system and liver, and skin or eye irritation. Exposure may occur through inhalation, by absorption through the skin, or through contact with the skin. MC is a solvent which is used in many different types of work activities, such as paint stripping, polyurethane foam manufacturing, and cleaning and degreasing. Under the requirements of subsection (4) of this section, each covered employer must make an initial determination of each employee's exposure to MC. If the employer determines that employees are exposed below the action level, the only other provisions of this section that apply are that a record must be made of the determination, the employees must receive information and training under subsection (12) of this section and, where appropriate, employees must be protected from contact with liquid MC under subsection (8) of this section.

The provisions of the MC standard are as follows:

(1) Scope and application. This section applies to all occupational exposures to methylene chloride (MC), Chemical Abstracts Service Registry Number 75-09-2, in general industry, construction and shipyard employment.

(2) Definitions. For the purposes of this section, the following definitions shall apply:

"Action level" means a concentration of airborne MC of 12.5 parts per million (ppm) calculated as an eight (8)-hour time-weighted average (TWA).

"Authorized person" means any person specifically authorized by the employer and required by work duties to be present in regulated areas, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under subsection (4) of this section, or any other person authorized by the WISH Act or regulations issued under the act.

"Director" means the director of the department of labor and industries, or designee.

"Emergency" means any occurrence, such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which results, or is likely to result in an uncontrolled release of MC. If an incidental release of MC can be controlled by employees such as maintenance personnel at the time of release and in accordance with the leak/spill provisions required by subsection (6) of this section, it is not considered an emergency as defined by this standard.

"Employee exposure" means exposure to airborne MC which occurs or would occur if the employee were not using respiratory protection.

"Methylene chloride (MC)" means an organic compound with chemical formula, CH₂Cl₂. Its Chemical Abstracts Service Registry Number is 75-09-2. Its molecular weight is 84.9 g/mole.

"Physician or other licensed health care professional" is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by subsection (10) of this section.

"Regulated area" means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

"Symptom" means central nervous system effects such as headaches, disorientation, dizziness, fatigue, and decreased attention span; skin effects such as chapping, erythema, cracked skin, or skin burns; and cardiac effects such as chest pain or shortness of breath.

"This section" means this methylene chloride standard.

(3) Permissible exposure limits (PELs).

(a) Eight-hour time-weighted average (TWA) PEL. The employer shall ensure that no employee is exposed to an airborne concentration of MC in excess of twenty-five parts of MC per million parts of air (25 ppm) as an 8-hour TWA.

(b) Short-term exposure limit (STEL). The employer shall ensure that no employee is exposed to an airborne concentration of MC in excess of one hundred and twenty-five parts of MC per million parts of air (125 ppm) as determined over a sampling period of fifteen minutes.

(4) Exposure monitoring.

(a) Characterization of employee exposure.

(i) Where MC is present in the workplace, the employer shall determine each employee's exposure by either:

(A) Taking a personal breathing zone air sample of each employee's exposure; or

(B) Taking personal breathing zone air samples that are representative of each employee's exposure.

(ii) Representative samples. The employer may consider personal breathing zone air samples to be representative of employee exposures when they are taken as follows:

(A) 8-hour TWA PEL. The employer has taken one or more personal breathing zone air samples for at least one employee in each job classification in a work area during every work shift, and the employee sampled is expected to have the highest MC exposure.

(B) Short-term exposure limits. The employer has taken one or more personal breathing zone air samples which indicate the highest likely 15-minute exposures during such operations for at least one employee in each job classification in the work area during every work shift, and the employee sampled is expected to have the highest MC exposure.

(C) Exception. Personal breathing zone air samples taken during one work shift may be used to represent employee exposures on other work shifts where the employer can document that the tasks performed and conditions in the workplace are similar across shifts.

(iii) Accuracy of monitoring. The employer shall ensure that the methods used to perform exposure monitoring produce results that are accurate to a confidence level of 95 percent, and are:

(A) Within plus or minus 25 percent for airborne concentrations of MC above the 8-hour TWA PEL or the STEL; or

(B) Within plus or minus 35 percent for airborne concentrations of MC at or above the action level but at or below the 8-hour TWA PEL.

(b) Initial determination. Each employer whose employees are exposed to MC shall perform initial exposure monitoring to determine each affected employee's exposure, except under the following conditions:

(i) Where objective data demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The objective data shall represent the highest MC exposures likely to occur

under reasonably foreseeable conditions of processing, use, or handling. The employer shall document the objective data exemption as specified in subsection (13) of this section;

(ii) Where the employer has performed exposure monitoring within 12 months prior to December 1, and that exposure monitoring meets all other requirements of this section, and was conducted under conditions substantially equivalent to existing conditions; or

(iii) Where employees are exposed to MC on fewer than 30 days per year (e.g., on a construction site), and the employer has measurements by direct reading instruments which give immediate results (such as a detector tube) and which provide sufficient information regarding employee exposures to determine what control measures are necessary to reduce exposures to acceptable levels.

(c) Periodic monitoring. Where the initial determination shows employee exposures at or above the action level or above the STEL, the employer shall establish an exposure monitoring program for periodic monitoring of employee exposure to MC in accordance with Table 1:

Table 1
Six Initial Determination Exposure Scenarios and Their Associated Monitoring Frequencies

Exposure scenario	Required monitoring activity
Below the action level and at or below the STEL.	No 8-hour TWA or STEL monitoring required.
Below the action level and above the STEL.	No 8-hour TWA monitoring required; monitor STEL exposures every three months.
At or above the action level, at or below the TWA, and at or below the STEL.	Monitor 8-hour TWA exposures every six months.
At or above the action level, at or below the TWA, and above the STEL.	Monitor 8-hour TWA exposures every six months and monitor STEL exposures every three months.
Above the TWA and at or below the STEL.	Monitor 8-hour TWA exposures every three months. In addition, without regard to the last sentence of the note to subsection (3) of this section, the following employers must monitor STEL exposures every three months until either the date by which they must achieve the 8-hour TWAs PEL under subsection (3) of this section or the date by which they in fact achieve the 8-hour TWA PEL, whichever comes first: <ul style="list-style-type: none"> • Employers engaged in polyurethane foam manufacturing; • Foam fabrication; • Furniture refinishing;

Exposure scenario

Required monitoring activity

	<ul style="list-style-type: none"> • General aviation aircraft stripping; • Product formulation; • Use of MC-based adhesives for boat building and repair; • Recreational vehicle manufacture, van conversion, or upholstery; and use of MC in construction work for restoration and preservation of buildings, painting and paint removal, cabinet making, or floor refinishing and resurfacing.
Above the TWA and above the STEL.	Monitor both 8-hour TWA exposures and STEL exposures every three months.

(Note to subsection (3)(c) of this section: The employer may decrease the frequency of exposure monitoring to every six months when at least 2 consecutive measurements taken at least 7 days apart show exposures to be at or below the 8-hour TWA PEL. The employer may discontinue the periodic 8-hour TWA monitoring for employees where at least two consecutive measurements taken at least 7 days apart are below the action level. The employer may discontinue the periodic STEL monitoring for employees where at least two consecutive measurements taken at least 7 days apart are at or below the STEL.)

(d) Additional monitoring.

(i) The employer shall perform exposure monitoring when a change in workplace conditions indicates that employee exposure may have increased. Examples of situations that may require additional monitoring include changes in production, process, control equipment, or work practices, or a leak, rupture, or other breakdown.

(ii) Where exposure monitoring is performed due to a spill, leak, rupture or equipment breakdown, the employer shall clean up the MC and perform the appropriate repairs before monitoring.

(e) Employee notification of monitoring results.

(i) The employer shall, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results in writing, either individually or by posting of results in an appropriate location that is accessible to affected employees.

(ii) Whenever monitoring results indicate that employee exposure is above the 8-hour TWA PEL or the STEL, the employer shall describe in the written notification the corrective action being taken to reduce employee exposure to or below the 8-hour TWA PEL or STEL and the schedule for completion of this action.

(f) Observation of monitoring.

(i) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to MC conducted in accordance with this section.

(ii) Observation procedures. When observation of the monitoring of employee exposure to MC requires entry into

an area where the use of protective clothing or equipment is required, the employer shall provide, at no cost to the observer(s), and the observer(s) shall be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

(5) Regulated areas.

(a) The employer shall establish a regulated area whenever an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

(b) The employer shall limit access to regulated areas to authorized persons.

(c) The employer shall supply a respirator, selected in accordance with subsection (7)(c) of this section, to each person who enters a regulated area and shall require each affected employee to use that respirator whenever MC exposures are likely to exceed the 8-hour TWA PEL or STEL.

(Note to subsection (5)(c) of this section: An employer who has implemented all feasible engineering, work practice and administrative controls (as required in subsection (6) of this section), and who has established a regulated area (as required by subsection (5)(a) of this section) where MC exposure can be reliably predicted to exceed the 8-hour TWA PEL or the STEL only on certain days (for example, because of work or process schedule) would need to have affected employees use respirators in that regulated area only on those days.)

(d) The employer shall ensure that, within a regulated area, employees do not engage in nonwork activities which may increase dermal or oral MC exposure.

(e) The employer shall ensure that while employees are wearing respirators, they do not engage in activities (such as taking medication or chewing gum or tobacco) which interfere with respirator seal or performance.

(f) The employer shall demarcate regulated areas from the rest of the workplace in any manner that adequately establishes and alerts employees to the boundaries of the area and minimizes the number of authorized employees exposed to MC within the regulated area.

(g) An employer at a multi-employer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to all other employers with work operations at that worksite.

(6) Methods of compliance.

(a) Engineering and work practice controls. The employer shall institute and maintain the effectiveness of engineering controls and work practices to reduce employee exposure to or below the PELs except to the extent that the employer can demonstrate that such controls are not feasible.

(b) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the 8-TWA PEL or STEL, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of subsection (7) of this section.

(c) Prohibition of rotation. The employer shall not implement a schedule of employee rotation as a means of compliance with the PELs.

(d) Leak and spill detection.

(i) The employer shall implement procedures to detect leaks of MC in the workplace. In work areas where spills may occur, the employer shall make provisions to contain any spills and to safely dispose of any MC-contaminated waste materials.

(ii) The employer shall ensure that all incidental leaks are repaired and that incidental spills are cleaned promptly by employees who use the appropriate personal protective equipment and are trained in proper methods of cleanup.

(Note to subsection (6)(d)(ii) of this section: See Appendix A of this section for examples of procedures that satisfy this requirement. Employers covered by this standard may also be subject to the hazardous waste and emergency response provisions contained in WAC 296-62-3112.)

(7) Respiratory protection.

(a) General requirements. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods when an employee's exposure to MC exceeds or can reasonably be expected to exceed the 8-hour TWA PEL or the STEL (for example, when an employee is using MC in a regulated area);

(ii) Periods necessary to install or implement feasible engineering and work-practice controls;

(iii) In a few work operations, such as some maintenance operations and repair activities, for which the employer demonstrates that engineering and work practice controls are infeasible;

(iv) Work operations for which feasible engineering and work practice controls are not sufficient to reduce exposures to or below the PELs;

(v) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07131 (4)(b)(i) and (ii)).

(ii) Employers who provide employees with gas masks with organic-vapor canisters for the purpose of emergency escape must replace the canisters after any emergency use and before the gas masks are returned to service.

(c) Respirator selection. The employer must select appropriate atmosphere-supplying respirators from Table 2 of this section.

Table 2.—Minimum Requirements for Respiratory Protection for Airborne Methylene Chloride

Methylene chloride airborne concentration (ppm) or condition of use	Minimum respirator required ¹
Up to 625 ppm (25 X PEL)	(1) Continuous flow supplied-air respirator, hood or helmet.

Methylene chloride air-borne concentration (ppm) or condition of use	Minimum respirator required ¹
Up to 1250 ppm (50 X 8 hr TWA PEL)	(1) Full facepiece supplied-air respirator operated in negative pressure (demand) mode. (2) Full facepiece self-contained breathing apparatus (SCBA) operated in negative pressure (demand) mode.
Up to 5000 ppm (200 X 8-TWA PEL)	(1) Continuous flow supplied-air respirator, full facepiece. (2) Pressure demand supplied-air respirator, full facepiece. (3) Positive pressure full facepiece SCBA.
Unknown concentration, or above 5000 ppm (Greater than 200 X 8-TWA PEL)	(1) Positive pressure full facepiece SCBA. (2) Full facepiece pressure demand supplied-air respirator with an auxiliary self-contained air supply.
Fire fighting	Positive pressure full facepiece SCBA.
Emergency escape	(1) Any continuous flow or pressure demand SCBA. (2) Gas mask with organic vapor canister.

¹ Respirators assigned for higher airborne concentrations may be used at lower concentrations.

(d) Medical evaluation. Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer must:

(i) Have a physician or other licensed health care professional (PLHCP) evaluate the employee's ability to use such respiratory protection;

(ii) Ensure that the PLHCP provides their findings in a written opinion to the employee and the employer.

Note: See WAC 296-62-07150 through 296-62-07156 for medical evaluation requirements for employees using respirators.

(8) Protective work clothing and equipment.

(a) Where needed to prevent MC-induced skin or eye irritation, the employer shall provide clean protective clothing and equipment which is resistant to MC, at no cost to the employee, and shall ensure that each affected employee uses it. Eye and face protection shall meet the requirements of WAC 296-24-078, as applicable.

(b) The employer shall clean, launder, repair and replace all protective clothing and equipment required by this subsection as needed to maintain their effectiveness.

(c) The employer shall be responsible for the safe disposal of such clothing and equipment.

(Note to subsection (8)(c) of this section: See Appendix A for examples of disposal procedures that will satisfy this requirement.)

(9) Hygiene facilities.

(a) If it is reasonably foreseeable that employees' skin may contact solutions containing 0.1 percent or greater MC (for example, through splashes, spills or improper work practices), the employer shall provide conveniently located washing facilities capable of removing the MC, and shall ensure that affected employees use these facilities as needed.

(b) If it is reasonably foreseeable that an employee's eyes may contact solutions containing 0.1 percent or greater MC (for example through splashes, spills or improper work practices), the employer shall provide appropriate eyewash facilities within the immediate work area for emergency use, and shall ensure that affected employees use those facilities when necessary.

(10) Medical surveillance.

(a) Affected employees. The employer shall make medical surveillance available for employees who are or may be exposed to MC as follows:

(i) At or above the action level on 30 or more days per year, or above the 8-hour TWA PEL or the STEL on 10 or more days per year;

(ii) Above the 8-TWA PEL or STEL for any time period where an employee has been identified by a physician or other licensed health care professional as being at risk from cardiac disease or from some other serious MC-related health condition and such employee requests inclusion in the medical surveillance program;

(iii) During an emergency.

(b) Costs. The employer shall provide all required medical surveillance at no cost to affected employees, without loss of pay and at a reasonable time and place.

(c) Medical personnel. The employer shall ensure that all medical surveillance procedures are performed by a physician or other licensed health care professional, as defined in subsection (2) of this section.

(d) Frequency of medical surveillance. The employer shall make medical surveillance available to each affected employee as follows:

(i) Initial surveillance. The employer shall provide initial medical surveillance under the schedule provided by subsection (14)(b)(iii) of this section, or before the time of initial assignment of the employee, whichever is later. The employer need not provide the initial surveillance if medical records show that an affected employee has been provided with medical surveillance that complies with this section within 12 months before December 1.

(ii) Periodic medical surveillance. The employer shall update the medical and work history for each affected employee annually. The employer shall provide periodic physical examinations, including appropriate laboratory surveillance, as follows:

(A) For employees 45 years of age or older, within 12 months of the initial surveillance or any subsequent medical surveillance; and

(B) For employees younger than 45 years of age, within 36 months of the initial surveillance or any subsequent medical surveillance.

(iii) Termination of employment or reassignment. When an employee leaves the employer's workplace, or is reassigned to an area where exposure to MC is consistently at or below the action level and STEL, medical surveillance shall be made available if six months or more have elapsed since the last medical surveillance.

(iv) Additional surveillance. The employer shall provide additional medical surveillance at frequencies other than those listed above when recommended in the written medical opinion. (For example, the physician or other licensed health care professional may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the results of the annual medical and work history.)

(e) Content of medical surveillance.

(i) Medical and work history. The comprehensive medical and work history shall emphasize neurological symptoms, skin conditions, history of hematologic or liver disease, signs or symptoms suggestive of heart disease (angina, coronary artery disease), risk factors for cardiac disease, MC exposures, and work practices and personal protective equipment used during such exposures.

(Note to subsection (10)(e)(i) of this section: See Appendix B of this section for an example of a medical and work history format that would satisfy this requirement.)

(ii) Physical examination. Where physical examinations are provided as required above, the physician or other licensed health care professional shall accord particular attention to the lungs, cardiovascular system (including blood pressure and pulse), liver, nervous system, and skin. The physician or other licensed health care professional shall determine the extent and nature of the physical examination based on the health status of the employee and analysis of the medical and work history.

(iii) Laboratory surveillance. The physician or other licensed health care professional shall determine the extent of any required laboratory surveillance based on the employee's observed health status and the medical and work history.

(Note to subsection (10)(e)(iii) of this section: See Appendix B of this section for information regarding medical tests. Laboratory surveillance may include before-and after-shift carboxyhemoglobin determinations, resting ECG, hematocrit, liver function tests and cholesterol levels.)

(iv) Other information or reports. The medical surveillance shall also include any other information or reports the physician or other licensed health care professional determines are necessary to assess the employee's health in relation to MC exposure.

(f) Content of emergency medical surveillance. The employer shall ensure that medical surveillance made available when an employee has been exposed to MC in emergency situations includes, at a minimum:

(i) Appropriate emergency treatment and decontamination of the exposed employee;

(ii) Comprehensive physical examination with special emphasis on the nervous system, cardiovascular system, lungs, liver and skin, including blood pressure and pulse;

(iii) Updated medical and work history, as appropriate for the medical condition of the employee; and

(iv) Laboratory surveillance, as indicated by the employee's health status.

(Note to subsection (10)(f)(iv) of this section: See Appendix B for examples of tests which may be appropriate.)

(g) Additional examinations and referrals. Where the physician or other licensed health care professional determines it is necessary, the scope of the medical examination shall be expanded and the appropriate additional medical surveillance, such as referrals for consultation or examination, shall be provided.

(h) Information provided to the physician or other licensed health care professional. The employer shall provide the following information to a physician or other licensed health care professional who is involved in the diagnosis of MC-induced health effects:

(i) A copy of this section including its applicable appendices;

(ii) A description of the affected employee's past, current and anticipated future duties as they relate to the employee's MC exposure;

(iii) The employee's former or current exposure levels or, for employees not yet occupationally exposed to MC, the employee's anticipated exposure levels and the frequency and exposure levels anticipated to be associated with emergencies;

(iv) A description of any personal protective equipment, such as respirators, used or to be used; and

(v) Information from previous employment-related medical surveillance of the affected employee which is not otherwise available to the physician or other licensed health care professional.

(i) Written medical opinions.

(i) For each physical examination required by this section, the employer shall ensure that the physician or other licensed health care professional provides to the employer and to the affected employee a written opinion regarding the results of that examination within 15 days of completion of the evaluation of medical and laboratory findings, but not more than 30 days after the examination. The written medical opinion shall be limited to the following information:

(A) The physician's or other licensed health care professional's opinion concerning whether exposure to MC may contribute to or aggravate the employee's existing cardiac, hepatic, neurological (including stroke) or dermal disease or whether the employee has any other medical condition(s) that would place the employee's health at increased risk of material impairment from exposure to MC;

(B) Any recommended limitations upon the employee's exposure to MC, removal from MC exposure, or upon the employee's use of protective clothing or equipment and respirators;

(C) A statement that the employee has been informed by the physician or other licensed health care professional that MC is a potential occupational carcinogen, of risk factors for heart disease, and the potential for exacerbation of underlying heart disease by exposure to MC through its metabolism to carbon monoxide; and

(D) A statement that the employee has been informed by the physician or other licensed health care professional of the results of the medical examination and any medical condi-

tions resulting from MC exposure which require further explanation or treatment.

(ii) The employer shall instruct the physician or other licensed health care professional not to reveal to the employer, orally or in the written opinion, any specific records, findings, and diagnoses that have no bearing on occupational exposure to MC.

(Note to subsection (10)(h)(ii) of this section: The written medical opinion may also include information and opinions generated to comply with other OSHA health standards.)

(j) Medical presumption. For purposes of this subsection (10), the physician or other licensed health care professional shall presume, unless medical evidence indicates to the contrary, that a medical condition is unlikely to require medical removal from MC exposure if the employee is not exposed to MC above the 8-hour TWA PEL. If the physician or other licensed health care professional recommends removal for an employee exposed below the 8-hour TWA PEL, the physician or other licensed health care professional shall cite specific medical evidence, sufficient to rebut the presumption that exposure below the 8-hour TWA PEL is unlikely to require removal, to support the recommendation. If such evidence is cited by the physician or other licensed health care professional, the employer must remove the employee. If such evidence is not cited by the physician or other licensed health care professional, the employer is not required to remove the employee.

(k) Medical removal protection (MRP).

(i) Temporary medical removal and return of an employee.

(A) Except as provided in (j) of this subsection, when a medical determination recommends removal because the employee's exposure to MC may contribute to or aggravate the employee's existing cardiac, hepatic, neurological (including stroke), or skin disease, the employer must provide medical removal protection benefits to the employee and either:

(I) Transfer the employee to comparable work where methylene chloride exposure is below the action level; or

(II) Remove the employee from MC exposure.

(B) If comparable work is not available and the employer is able to demonstrate that removal and the costs of extending MRP benefits to an additional employee, considering feasibility in relation to the size of the employer's business and the other requirements of this standard, make further reliance on MRP an inappropriate remedy, the employer may retain the additional employee in the existing job until transfer or removal becomes appropriate, provided:

(I) The employer ensures that the employee receives additional medical surveillance, including a physical examination at least every 60 days until transfer or removal occurs; and

(II) The employer or PLHCP informs the employee of the risk to the employee's health from continued MC exposure.

(C) The employer shall maintain in effect any job-related protective measures or limitations, other than removal, for as long as a medical determination recommends them to be necessary.

(ii) End of MRP benefits and return of the employee to former job status.

(A) The employer may cease providing MRP benefits at the earliest of the following:

(I) Six months;

(II) Return of the employee to the employee's former job status following receipt of a medical determination concluding that the employee's exposure to MC no longer will aggravate any cardiac, hepatic, neurological (including stroke), or dermal disease;

(III) Receipt of a medical determination concluding that the employee can never return to MC exposure.

(B) For the purposes of this subsection (10), the requirement that an employer return an employee to the employee's former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(I) Medical removal protection benefits.

(i) For purposes of this subsection (10), the term medical removal protection benefits means that, for each removal, an employer must maintain for up to six months the earnings, seniority, and other employment rights and benefits of the employee as though the employee had not been removed from MC exposure or transferred to a comparable job.

(ii) During the period of time that an employee is removed from exposure to MC, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this section.

(iii) If a removed employee files a workers' compensation claim for a MC-related disability, the employer shall continue the MRP benefits required by this section until either the claim is resolved or the 6-month period for payment of MRP benefits has passed, whichever occurs first. To the extent the employee is entitled to indemnity payments for earnings lost during the period of removal, the employer's obligation to provide medical removal protection benefits to the employee shall be reduced by the amount of such indemnity payments.

(iv) The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal from either a publicly or an employer-funded compensation program, or receives income from employment with another employer made possible by virtue of the employee's removal.

(m) Voluntary removal or restriction of an employee. Where an employer, although not required by this section to do so, removes an employee from exposure to MC or otherwise places any limitation on an employee due to the effects of MC exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to those required by (I) of this subsection.

(n) Multiple health care professional review mechanism.

(i) If the employer selects the initial physician or licensed health care professional (PLHCP) to conduct any medical examination or consultation provided to an employee under (k) of this subsection, the employer shall

notify the employee of the right to seek a second medical opinion each time the employer provides the employee with a copy of the written opinion of that PLHCP.

(ii) If the employee does not agree with the opinion of the employer-selected PLHCP, notifies the employer of that fact, and takes steps to make an appointment with a second PLHCP within 15 days of receiving a copy of the written opinion of the initial PLHCP, the employer shall pay for the PLHCP chosen by the employee to perform at least the following:

(A) Review any findings, determinations or recommendations of the initial PLHCP; and

(B) Conduct such examinations, consultations, and laboratory tests as the PLHCP deems necessary to facilitate this review.

(iii) If the findings, determinations or recommendations of the second PLHCP differ from those of the initial PLHCP, then the employer and the employee shall instruct the two health care professionals to resolve the disagreement.

(iv) If the two health care professionals are unable to resolve their disagreement within 15 days, then those two health care professionals shall jointly designate a PLHCP who is a specialist in the field at issue. The employer shall pay for the specialist to perform at least the following:

(A) Review the findings, determinations, and recommendations of the first two PLHCPs; and

(B) Conduct such examinations, consultations, laboratory tests and discussions with the prior PLHCPs as the specialist deems necessary to resolve the disagreements of the prior health care professionals.

(v) The written opinion of the specialist shall be the definitive medical determination. The employer shall act consistent with the definitive medical determination, unless the employer and employee agree that the written opinion of one of the other two PLHCPs shall be the definitive medical determination.

(vi) The employer and the employee or authorized employee representative may agree upon the use of any expeditious alternate health care professional determination mechanism in lieu of the multiple health care professional review mechanism provided by this section so long as the alternate mechanism otherwise satisfies the requirements contained in this section.

(11) Hazard communication. The employer shall communicate the following hazards associated with MC on labels and in material safety data sheets in accordance with the requirements of the hazard communication standard, WAC 296-62-054: Cancer, cardiac effects (including elevation of carboxyhemoglobin), central nervous system effects, liver effects, and skin and eye irritation.

(12) Employee information and training.

(a) The employer shall provide information and training for each affected employee prior to or at the time of initial assignment to a job involving potential exposure to MC.

(b) The employer shall ensure that information and training is presented in a manner that is understandable to the employees.

(c) In addition to the information required under the hazard communication standard at WAC 296-62-054:

(i) The employer shall inform each affected employee of the requirements of this section and information available in its appendices, as well as how to access or obtain a copy of it in the workplace;

(ii) Wherever an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed the action level, the employer shall inform each affected employee of the quantity, location, manner of use, release, and storage of MC and the specific operations in the workplace that could result in exposure to MC, particularly noting where exposures may be above the 8-hour TWA PEL or STEL;

(d) The employer shall train each affected employee as required under the hazard communication standard at WAC 296-62-054, as appropriate.

(e) The employer shall re-train each affected employee as necessary to ensure that each employee exposed above the action level or the STEL maintains the requisite understanding of the principles of safe use and handling of MC in the workplace.

(f) Whenever there are workplace changes, such as modifications of tasks or procedures or the institution of new tasks or procedures, which increase employee exposure, and where those exposures exceed or can reasonably be expected to exceed the action level, the employer shall update the training as necessary to ensure that each affected employee has the requisite proficiency.

(g) An employer whose employees are exposed to MC at a multi-employer worksite shall notify the other employers with work operations at that site in accordance with the requirements of the hazard communication standard, WAC 296-62-054, as appropriate.

(h) The employer shall provide to the director, upon request, all available materials relating to employee information and training.

(13) Recordkeeping.

(a) Objective data.

(i) Where an employer seeks to demonstrate that initial monitoring is unnecessary through reasonable reliance on objective data showing that any materials in the workplace containing MC will not release MC at levels which exceed the action level or the STEL under foreseeable conditions of exposure, the employer shall establish and maintain an accurate record of the objective data relied upon in support of the exemption.

(ii) This record shall include at least the following information:

(A) The MC-containing material in question;

(B) The source of the objective data;

(C) The testing protocol, results of testing, and/or analysis of the material for the release of MC;

(D) A description of the operation exempted under subsection (4)(b)(i) of this section and how the data support the exemption; and

(E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(b) Exposure measurements.

(i) The employer shall establish and keep an accurate record of all measurements taken to monitor employee exposure to MC as prescribed in subsection (4) of this section.

(ii) Where the employer has 20 or more employees, this record shall include at least the following information:

(A) The date of measurement for each sample taken;

(B) The operation involving exposure to MC which is being monitored;

(C) Sampling and analytical methods used and evidence of their accuracy;

(D) Number, duration, and results of samples taken;

(E) Type of personal protective equipment, such as respiratory protective devices, worn, if any; and

(F) Name, Social Security number, job classification and exposure of all of the employees represented by monitoring, indicating which employees were actually monitored.

(iii) Where the employer has fewer than 20 employees, the record shall include at least the following information:

(A) The date of measurement for each sample taken;

(B) Number, duration, and results of samples taken; and

(C) Name, Social Security number, job classification and exposure of all of the employees represented by monitoring, indicating which employees were actually monitored.

(iv) The employer shall maintain this record for at least thirty (30) years, in accordance with WAC 296-62-052.

(c) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance under subsection (10) of this section.

(ii) The record shall include at least the following information:

(A) The name, Social Security number and description of the duties of the employee;

(B) Written medical opinions; and

(C) Any employee medical conditions related to exposure to MC.

(iii) The employer shall ensure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with WAC 296-62-052.

(d) Availability.

(i) The employer, upon written request, shall make all records required to be maintained by this section available to the director for examination and copying in accordance with WAC 296-62-052.

(Note to subsection (13)(d)(i) of this section: All records required to be maintained by this section may be kept in the most administratively convenient form (for example, electronic or computer records would satisfy this requirement).)

(ii) The employer, upon request, shall make any employee exposure and objective data records required by this section available for examination and copying by affected employees, former employees, and designated representatives in accordance with WAC 296-62-052.

(iii) The employer, upon request, shall make employee medical records required to be kept by this section available for examination and copying by the subject employee and by anyone having the specific written consent of the subject employee in accordance with WAC 296-62-052.

(e) Transfer of records. The employer shall comply with the requirements concerning transfer of records set forth in WAC 296-62-05215.

(14) Dates.

(a) Engineering controls required under subsection (6)(a) of this section shall be implemented according to the following schedule:

(i) For employers with fewer than 20 employees, no later than April 10, 2000.

(ii) For employers with fewer than 150 employees engaged in foam fabrication; for employers with fewer than 50 employees engaged in furniture refinishing, general aviation aircraft stripping, and product formulation; for employers with fewer than 50 employees using MC-based adhesives for boat building and repair, recreational vehicle manufacture, van conversion, and upholstery; for employers with fewer than 50 employees using MC in construction work for restoration and preservation of buildings, painting and paint removal, cabinet making and/or floor refinishing and resurfacing, no later than April 10, 2000.

(iii) For employers engaged in polyurethane foam manufacturing with 20 or more employees, no later than October 10, 1999.

(b) Use of respiratory protection whenever an employee's exposure to MC exceeds or can reasonably be expected to exceed the 8-hour TWA PEL, in accordance with subsection (3)(a), (5)(c), (6)(a) and (7)(a) of this section, shall be implemented according to the following schedule:

(i) For employers with fewer than 150 employees engaged in foam fabrication; for employers with fewer than 50 employees engaged in furniture refinishing, general aviation aircraft stripping, and product formulation; for employers with fewer than 50 employees using MC-based adhesives for boat building and repair, recreational vehicle manufacture, van conversion, and upholstery; for employers with fewer than 50 employees using MC in construction work for restoration and preservation of buildings, painting and paint removal, cabinet making and/or floor refinishing and resurfacing, no later than April 10, 2000.

(ii) For employers engaged in polyurethane foam manufacturing with 20 or more employees, no later than October 10, 1999.

(c) Notification of corrective action under subsection (4)(e)(ii) of this section, no later than 90 days before the compliance date applicable to such corrective action.

(d) Transitional dates. The exposure limits for MC specified in WAC 296-62-07515 Table 1, shall remain in effect until the start-up dates for the exposure limits specified in subsection (14) of this section, or if the exposure limits in this section are stayed or vacated.

(e) Unless otherwise specified in this subsection (14), all other requirements of this section shall be complied with immediately.

(15) Appendices. The information contained in the appendices does not, by itself, create any additional obligations not otherwise imposed or detract from any existing obligation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07470, filed 5/4/99, effective 9/1/99. Statutory Authority:

RCW 49.17.040, [49.17].050 and [49.17].060. 97-18-062, § 296-62-07470, filed 9/2/97, effective 12/1/97.]

WAC 296-62-07521 Lead. (1) Scope and application.

(a) This section applies to all occupational exposure to lead, except as provided in subdivision (1)(b).

(b) This section does not apply to the construction industry or to agricultural operations covered by chapter 296-306 WAC.

(2) Definitions as applicable to this part.

(a) "Action level" - employee exposure, without regard to the use of respirators, to an airborne concentration of lead of thirty micrograms per cubic meter of air ($30 \mu\text{g}/\text{m}^3$) averaged over an eight-hour period.

(b) "Director" - the director of the department of labor and industries.

(c) "Lead" - metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

(3) General requirements.

(a) Employers will assess the hazards of lead in the work place and provide information to the employees about the hazards of the lead exposures to which they may be exposed.

(b) Information provided shall include:

(i) Exposure monitoring (including employee notification);

(ii) Written compliance programs;

(iii) Respiratory protection programs;

(iv) Personnel protective equipment and housekeeping;

(v) Medical surveillance and examinations;

(vi) Training requirements;

(vii) Recordkeeping requirements.

(4) Permissible exposure limit (PEL).

(a) The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air ($50 \mu\text{g}/\text{m}^3$) averaged over an eight-hour period.

(b) If an employee is exposed to lead for more than eight hours in any work day, the permissible exposure limit, as a time weighted average (TWA) for that day, shall be reduced according to the following formula:

$$\text{Maximum permissible limit (in } \mu\text{g}/\text{m}^3) = 400 \div \text{hours worked in the day.}$$

(c) When respirators are used to supplement engineering and work practice controls to comply with the PEL and all the requirements of subsection (7) have been met, employee exposure, for the purpose of determining whether the employer has complied with the PEL, may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

(5) Exposure monitoring.

(a) General.

(i) For the purposes of subsection (5), employee exposure is that exposure which would occur if the employee were not using a respirator.

(ii) With the exception of monitoring under subdivision (5)(c), the employer shall collect full shift (for at least seven continuous hours) personal samples including at least one sample for each shift for each job classification in each work area.

(iii) Full shift personal samples shall be representative of the monitored employee's regular, daily exposure to lead.

(b) Initial determination. Each employer who has a workplace or work operation covered by this standard shall determine if any employee may be exposed to lead at or above the action level.

(c) Basis of initial determination.

(i) The employer shall monitor employee exposures and shall base initial determinations on the employee exposure monitoring results and any of the following, relevant considerations:

(A) Any information, observations, or calculations which would indicate employee exposure to lead;

(B) Any previous measurements of airborne lead; and

(C) Any employee complaints of symptoms which may be attributable to exposure to lead.

(ii) Monitoring for the initial determination may be limited to a representative sample of the exposed employees who the employer reasonably believes are exposed to the greatest airborne concentrations of lead in the workplace.

(iii) Measurements of airborne lead made in the preceding twelve months may be used to satisfy the requirement to monitor under item (5)(c)(i) if the sampling and analytical methods used meet the accuracy and confidence levels of subdivision (5)(i) of this section.

(d) Positive initial determination and initial monitoring.

(i) Where a determination conducted under subdivision (5)(b) and (5)(c) of this section shows the possibility of any employee exposure at or above the action level, the employer shall conduct monitoring which is representative of the exposure for each employee in the workplace who is exposed to lead.

(ii) Measurements of airborne lead made in the preceding twelve months may be used to satisfy this requirement if the sampling and analytical methods used meet the accuracy and confidence levels of subdivision (5)(i) of this section.

(e) Negative initial determination. Where a determination, conducted under subdivisions (5)(b) and (5)(c) of this section is made that no employee is exposed to airborne concentrations of lead at or above the action level, the employer shall make a written record of such determination. The record shall include at least the information specified in subdivision (5)(c) of this section and shall also include the date of determination, location within the worksite, and the name and social security number of each employee monitored.

(f) Frequency.

(i) If the initial monitoring reveals employee exposure to be below the action level the measurements need not be repeated except as otherwise provided in subdivision (5)(g) of this section.

(ii) If the initial determination or subsequent monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit the employer shall repeat monitoring in accordance with this subsection at least every six months. The employer shall continue monitoring at

the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in subdivision (5)(g) of this section.

(iii) If the initial monitoring reveals that employee exposure is above the permissible exposure limit the employer shall repeat monitoring quarterly. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the PEL but at or above the action level at which time the employer shall repeat monitoring for that employee at the frequency specified in item (5)(f)(ii), except as otherwise provided in subdivision (5)(g) of this section.

(g) Additional monitoring. Whenever there has been a production, process, control or personnel change which may result in new or additional exposure to lead, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to lead, additional monitoring in accordance with this subsection shall be conducted.

(h) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(ii) Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

(i) Accuracy of measurement. The employer shall use a method of monitoring and analysis which has an accuracy (to a confidence level of ninety-five percent) of not less than plus or minus twenty percent for airborne concentrations of lead equal to or greater than $30 \mu\text{g}/\text{m}^3$.

(6) Methods of compliance.

(a) Engineering and work practice controls.

(i) Where any employee is exposed to lead above the permissible exposure limit for more than thirty days per year, the employer shall implement engineering and work practice controls (including administrative controls) to reduce and maintain employee exposure to lead in accordance with the implementation schedule in Table I below, except to the extent that the employer can demonstrate that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest feasible level and shall supplement them by the use of respiratory protection which complies with the requirements of subsection (7) of this section.

(ii) Where any employee is exposed to lead above the permissible exposure limit, but for thirty days or less per year, the employer shall implement engineering controls to reduce exposures to $200 \mu\text{g}/\text{m}^3$, but thereafter may implement any combination of engineering, work practice (including administrative controls), and respiratory controls to

reduce and maintain employee exposure to lead to or below $50 \mu\text{g}/\text{m}^3$.

TABLE 1

Industry	Compliance dates: ¹ ($50 \mu\text{g}/\text{m}^3$)
Lead chemicals, secondary copper smelting.	July 19, 1996
Nonferrous foundries	July 19, 1996. ²
Brass and bronze ingot manufacture.	6 years. ³

¹ Calculated by counting from the date the stay on implementation of subsection (6)(a) was lifted by the U.S. Court of Appeals for the District of Columbia, the number of years specified in the 1978 lead standard and subsequent amendments for compliance with the PEL of $50 \mu\text{g}/\text{m}^3$ for exposure to airborne concentrations of lead levels for the particular industry.

² Large nonferrous foundries (20 or more employees) are required to achieve the PEL of $50 \mu\text{g}/\text{m}^3$ by means of engineering and work practice controls. Small nonferrous foundries (fewer than 20 employees) are required to achieve an 8-hour TWA of $75 \mu\text{g}/\text{m}^3$ by such controls.

³ Expressed as the number of years from the date on which the Court lifts the stay on the implementation of subsection (6)(a) for this industry for employers to achieve a lead in air concentration of $75 \mu\text{g}/\text{m}^3$. Compliance with subsection (6) in this industry is determined by a compliance directive that incorporates elements from the settlement agreement between OSHA and representatives of the industry.

(b) Respiratory protection. Where engineering and work practice controls do not reduce employee exposure to or below the $50 \mu\text{g}/\text{m}^3$ permissible exposure limit, the employer shall supplement these controls with respirators in accordance with subsection (7).

(c) Compliance program.

(i) Each employer shall establish and implement a written compliance program to reduce exposures to or below the permissible exposure limit, and interim levels if applicable, solely by means of engineering and work practice controls in accordance with the implementation schedule in subdivision (6)(a).

(ii) Written plans for these compliance programs shall include at least the following:

(A) A description of each operation in which lead is emitted; e.g., machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices;

(B) A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to lead;

(C) A report of the technology considered in meeting the permissible exposure limit;

(D) Air monitoring data which documents the source of lead emissions;

(E) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;

(F) A work practice program which includes items required under subsections (8), (9) and (10) of this regulation;

(G) An administrative control schedule required by subdivision (6)(f), if applicable; and

(H) Other relevant information.

(iii) Written programs shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, any affected employee or authorized employee representatives.

(iv) Written programs shall be revised and updated at least every six months to reflect the current status of the program.

(d) Mechanical ventilation.

(i) When ventilation is used to control exposure, measurements which demonstrate the effectiveness of the system in controlling exposure, such as capture velocity, duct velocity, or static pressure shall be made at least every three months. Measurements of the system's effectiveness in controlling exposure shall be made within five days of any change in production, process, or control which might result in a change in employee exposure to lead.

(ii) Recirculation of air. If air from exhaust ventilation is recirculated into the workplace, the employer shall assure that (A) the system has a high efficiency filter with reliable back-up filter; and (B) controls to monitor the concentration of lead in the return air and to bypass the recirculation system automatically if it fails are installed, operating, and maintained.

(e) Administrative controls. If administrative controls are used as a means of reducing employees TWA exposure to lead, the employer shall establish and implement a job rotation schedule which includes:

(i) Name or identification number of each affected employee;

(ii) Duration and exposure levels at each job or work station where each affected employee is located; and

(iii) Any other information which may be useful in assessing the reliability of administrative controls to reduce exposure to lead.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Period necessary to install or implement engineering or work-practice controls;

(ii) Work operations for which engineering and work-practice controls are not sufficient to reduce exposures to or below the permissible exposure limit;

(iii) Periods when an employee requests a respirator.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(ii) If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination as required by subsection (11)(c)(ii)(C) of this section to determine whether or not the employee can use a respirator while performing the required duty.

(c) Respirator selection.

(i) The employer must select the appropriate respirator or combination of respirators from Table II of this section.

(ii) The employer must provide a powered air-purifying respirator instead of the respirator specified in Table II of this section when an employee chooses to use this type of respirator and that such a respirator provides adequate protection to the employee.

TABLE II
RESPIRATORY PROTECTION FOR LEAD AEROSOLS

Airborne Concentration of Lead or Condition of Use	Required Respirator ¹
Not in excess of 0.5 mg/m ³ (10X PEL).	Half-mask, air-purifying respirator equipped with high efficiency filters. ^{2,3}
Not in excess of 2.5 mg/m ³ (50X PEL).	Full facepiece, air-purifying respirator with high efficiency filters. ³
Not in excess of 50 mg/m ³ (1000X PEL).	(1) Any powered, air-purifying respirator with high efficiency filters ³ ; or (2) Half-mask supplied-air respirator operated in positive-pressure mode. ²
Not in excess of 100 mg/m ³ (2000X PEL).	Supplied-air respirators with full facepiece, hood, helmet, or suit, operated in positive pressure mode.
Greater than 100 mg/m ³ , unknown concentration or fire fighting.	Full facepiece, self-contained breathing apparatus operated in positive-pressure mode.

Note: ¹ Respirators specified for high concentrations can be used at lower concentrations of lead.

² Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.

³ A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron size particles.

(8) Protective work clothing and equipment.

(a) Provision and use. If an employee is exposed to lead above the PEL, without regard to the use of respirators or where the possibility of skin or eye irritation exists, the employer shall provide at no cost to the employee and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(i) Coveralls or similar full-body work clothing;

(ii) Gloves, hats, and shoes or disposable shoe coverlets; and

(iii) Face shields, vented goggles, or other appropriate protective equipment which complies with WAC 296-24-078.

(b) Cleaning and replacement.

(i) The employer shall provide the protective clothing required in subdivision (8)(a) of this section in a clean and dry condition at least weekly, and daily to employees whose exposure levels without regard to a respirator are over 200 µg/m³ of lead as an eight-hour TWA.

(ii) The employer shall provide for the cleaning, laundering, or disposal of protective clothing and equipment required by subdivision (8)(a) of this section.

(iii) The employer shall repair or replace required protective clothing and equipment as needed to maintain their effectiveness.

(iv) The employer shall assure that all protective clothing is removed at the completion of a work shift only in change

rooms provided for that purpose as prescribed in subdivision (10)(b) of this section.

(v) The employer shall assure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closed container in the change-room which prevents dispersion of lead outside the container.

(vi) The employer shall inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

(vii) The employer shall assure that the containers of contaminated protective clothing and equipment required by subdivision (8)(b)(v) are labeled as follows:

CAUTION: CLOTHING CONTAMINATED WITH LEAD.
DO NOT REMOVE DUST BY BLOWING OR SHAKING.
DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

(viii) The employer shall prohibit the removal of lead from protective clothing or equipment by blowing, shaking, or any other means which disperses lead into the air.

(9) Housekeeping.

(a) Surfaces. All surfaces shall be maintained as free as practicable of accumulations of lead.

(b) Cleaning floors.

(i) Floors and other surfaces where lead accumulates may not be cleaned by the use of compressed air.

(ii) Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective.

(c) Vacuuming. Where vacuuming methods are selected, the vacuums shall be used and emptied in a manner which minimizes the reentry of lead into the workplace.

(10) Hygiene facilities and practices.

(a) The employer shall assure that in areas where employees are exposed to lead above the PEL, without regard to the use of respirators, food or beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, except in change rooms, lunchrooms, and showers required under subdivision (10)(b) through (10)(d) of this section.

(b) Change rooms.

(i) The employer shall provide clean change rooms for employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators.

(ii) The employer shall assure that change rooms are equipped with separate storage facilities for protective work clothing and equipment and for street clothes which prevent cross-contamination.

(c) Showers.

(i) The employer shall assure that employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators, shower at the end of the work shift.

(ii) The employer shall provide shower facilities in accordance with WAC 296-24-12009.

(iii) The employer shall assure that employees who are required to shower pursuant to item (10)(c)(i) do not leave the

workplace wearing any clothing or equipment worn during the work shift.

(d) Lunchrooms.

(i) The employer shall provide lunchroom facilities for employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators.

(ii) The employer shall assure that lunchroom facilities have a temperature controlled, positive pressure, filtered air supply, and are readily accessible to employees.

(iii) The employer shall assure that employees who work in areas where their airborne exposure to lead is above the PEL without regard to the use of a respirator wash their hands and face prior to eating, drinking, smoking or applying cosmetics.

(iv) The employer shall assure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface lead dust has been removed by vacuuming, downdraft booth, or other cleaning method.

(e) Lavatories. The employer shall provide an adequate number of lavatory facilities which comply with WAC 296-24-12009 (1) and (2).

(11) Medical surveillance.

(a) General.

(i) The employer shall institute a medical surveillance program for all employees who are or may be exposed above the action level for more than thirty days per year.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician.

(iii) The employer shall provide the required medical surveillance including multiple physician review under item (11)(c)(iii) without cost to employees and at a reasonable time and place.

(b) Biological monitoring.

(i) Blood lead and ZPP level sampling and analysis. The employer shall make available biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels to each employee covered under item (11)(a)(i) of this section on the following schedule:

(A) At least every six months to each employee covered under item (11)(a)(i) of this section;

(B) At least every two months for each employee whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/100 g of whole blood. This frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 µg/100 g of whole blood; and

(C) At least monthly during the removal period of each employee removed from exposure to lead due to an elevated blood lead level.

(ii) Follow-up blood sampling tests. Whenever the results of a blood lead level test indicate that an employee's blood lead level exceeds the numerical criterion for medical removal under item (12)(a)(i)(A), the employer shall provide a second (follow-up) blood sampling test within two weeks after the employer receives the results of the first blood sampling test.

(iii) Accuracy of blood lead level sampling and analysis. Blood lead level sampling and analysis provided pursuant to

this section shall have an accuracy (to a confidence level of ninety-five percent) within plus or minus fifteen percent or 6 $\mu\text{g}/100\text{ ml}$, whichever is greater, and shall be conducted by a laboratory licensed by the Center for Disease Control (CDC), United States Department of Health, Education and Welfare or which has received a satisfactory grade in blood lead proficiency testing from CDC in the prior twelve months.

(iv) Employee notification. Within five working days after the receipt of biological monitoring results, the employer shall notify in writing each employee whose blood lead level exceeds 40 $\mu\text{g}/100\text{ g}$: (A) of that employee's blood lead level and (B) that the standard requires temporary medical removal with medical removal protection benefits when an employee's blood lead level exceeds the numerical criterion for medical removal under item (12)(a)(i) of this section.

(c) Medical examinations and consultations.

(i) Frequency. The employer shall make available medical examinations and consultations to each employee covered under item (11)(a)(i) of this section on the following schedule:

(A) At least annually for each employee for whom a blood sampling test conducted at any time during the preceding twelve months indicated a blood lead level at or above 40 $\mu\text{g}/100\text{ g}$;

(B) Prior to assignment for each employee being assigned for the first time to an area in which airborne concentrations of lead are at or above the action level;

(C) As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use; and

(D) As medically appropriate for each employee either removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited pursuant to a final medical determination.

(ii) Content. Medical examinations made available pursuant to subitems (11)(c)(i)(A) through (B) of this section shall include the following elements:

(A) A detailed work history and a medical history, with particular attention to past lead exposure (occupational and nonoccupational), personal habits (smoking, hygiene), and past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological problems;

(B) A thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems. Pulmonary status should be evaluated if respiratory protection will be used;

(C) A blood pressure measurement;

(D) A blood sample and analysis which determines:

(I) Blood lead level;

(II) Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology;

(III) Zinc protoporphyrin;

(IV) Blood urea nitrogen; and

(V) Serum creatinine;

(E) A routine urinalysis with microscopic examination; and

(F) Any laboratory or other test which the examining physician deems necessary by sound medical practice.

The content of medical examinations made available pursuant to subitems (11)(c)(i)(C) through (D) of this section shall be determined by an examining physician and, if requested by an employee, shall include pregnancy testing or laboratory evaluation of male fertility.

(iii) Multiple physician review mechanism.

(A) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under this section, the employee may designate a second physician:

(I) To review any findings, determinations or recommendations of the initial physician; and

(II) To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

(B) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen days after receipt of the foregoing notification, or receipt of the initial physician's written opinion, whichever is later:

(I) The employee informing the employer that he or she intends to seek a second medical opinion, and

(II) The employee initiating steps to make an appointment with a second physician.

(C) If the findings, determinations or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

(D) If the two physicians have been unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician:

(I) To review any findings, determinations or recommendations of the prior physicians; and

(II) To conduct such examinations, consultations, laboratory tests and discussions with the prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.

(E) The employer shall act consistent with the findings, determinations and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(iv) Information provided to examining and consulting physicians.

(A) The employer shall provide an initial physician conducting a medical examination or consultation under this section with the following information:

(I) A copy of this regulation for lead including all appendices;

(II) A description of the affected employee's duties as they relate to the employee's exposure;

(III) The employee's exposure level or anticipated exposure level to lead and to any other toxic substance (if applicable);

(IV) A description of any personal protective equipment used or to be used;

(V) Prior blood lead determinations; and

(VI) All prior written medical opinions concerning the employee in the employer's possession or control.

(B) The employer shall provide the foregoing information to a second or third physician conducting a medical examination or consultation under this section upon request either by the second or third physician, or by the employee.

(v) Written medical opinions.

(A) The employer shall obtain and furnish the employee with a copy of a written medical opinion from each examining or consulting physician which contains the following information:

(I) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at increased risk of material impairment of the employee's health from exposure to lead;

(II) Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead;

(III) Any recommended limitation upon the employee's use of respirators, including a determination of whether the employee can wear a powered air purifying respirator if a physician determines that the employee cannot wear a negative pressure respirator; and

(IV) The results of the blood lead determinations.

(B) The employer shall instruct each examining and consulting physician to:

(I) Not reveal either in the written opinion, or in any other means of communication with the employer, findings, including laboratory results, or diagnoses unrelated to an employee's occupational exposure to lead; and

(II) Advise the employee of any medical condition, occupational or nonoccupational, which dictates further medical examination or treatment.

(vi) Alternate physician determination mechanisms. The employer and an employee or authorized employee representative may agree upon the use of any expeditious alternate physician determination mechanism in lieu of the multiple physician review mechanism provided by this subsection so long as the alternate mechanism otherwise satisfies the requirements contained in this subsection.

(d) Chelation.

(i) The employer shall assure that any person whom he retains, employs, supervises or controls does not engage in prophylactic chelation of any employee at any time.

(ii) If therapeutic or diagnostic chelation is to be performed by any person in item (11)(d)(i), the employer shall assure that it be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring and that the employee is notified in writing prior to its occurrence.

(12) Medical removal protection.

(a) Temporary medical removal and return of an employee.

(i) Temporary removal due to elevated blood lead levels.

(A) The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that a periodic and a follow-up blood sampling test conducted pursuant to this section indicate that the employee's blood lead level is at or above 60 $\mu\text{g}/100\text{ g}$ of whole blood; and

(B) The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that the average of the last three blood sampling tests conducted pursuant to this section (or the average of all blood sampling tests conducted over the previous six months, whichever is longer) indicates that the employee's blood lead level is at or above 50 $\mu\text{g}/100\text{ g}$ of whole blood; provided, however, that an employee need not be removed if the last blood sampling test indicates a blood lead level at or below 40 $\mu\text{g}/100\text{ g}$ of whole blood.

(ii) Temporary removal due to a final medical determination.

(A) The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

(B) For the purposes of this section, the phrase "final medical determination" shall mean the outcome of the multiple physician review mechanism or alternate medical determination mechanism used pursuant to the medical surveillance provisions of this section.

(C) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to lead, the employer shall implement and act consistent with the recommendation.

(iii) Return of the employee to former job status.

(A) The employer shall return an employee to his or her former job status:

(I) For an employee removed due to a blood lead level at or above 60 $\mu\text{g}/100\text{ g}$, or due to an average blood lead level at or above 50 $\mu\text{g}/100\text{ g}$, when two consecutive blood sampling tests indicate that the employee's blood lead level is at or below 40 $\mu\text{g}/100\text{ g}$ of whole blood;

(II) For an employee removed due to a final medical determination, when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

(B) For the purposes of this section, the requirement that an employer return an employee to his or her former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(iv) Removal of other employee special protective measure or limitations. The employer shall remove any limitations placed on an employee or end any special protective measures provided to an employee pursuant to a final medical determination when a subsequent final medical determination indicates that the limitations or special protective measures are no longer necessary.

(v) Employer options pending a final medical determination. Where the multiple physician review mechanism, or alternate medical determination mechanism used pursuant to the medical surveillance provisions of this section, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:

(A) Removal. The employer may remove the employee from exposure to lead, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status.

(B) Return. The employer may return the employee to his or her former job status, end any special protective measures provided to the employee, and remove any limitations placed upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status, with two exceptions. If:

(I) The initial removal, special protection, or limitation of the employee resulted from a final medical determination which differed from the findings, determinations, or recommendations of the initial physician; or

(II) The employee has been on removal status for the preceding eighteen months due to an elevated blood lead level, then the employer shall await a final medical determination.

(b) Medical removal protection benefits.

(i) Provision of medical removal protection benefits. The employer shall provide to an employee up to eighteen months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this section.

(ii) Definition of medical removal protection benefits. For the purposes of this section, the requirement that an employer provide medical removal protection benefits means that the employer shall maintain the earnings, seniority and other employment rights and benefits of an employee as though the employee had not been removed from normal exposure to lead or otherwise limited.

(iii) Follow-up medical surveillance during the period of employee removal or limitation. During the period of time that an employee is removed from normal exposure to lead or otherwise limited, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this section.

(iv) Workers' compensation claims. If a removed employee files a claim for workers' compensation payments for a lead-related disability, then the employer shall continue to provide medical removal protection benefits pending disposition of the claim. To the extent that an award is made to the employee for earnings lost during the period of removal,

the employer's medical removal protection obligation shall be reduced by such amount. The employer shall receive no credit for workers' compensation payments received by the employee for treatment related expenses.

(v) Other credits. The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or receives income from employment with another employer made possible by virtue of the employee's removal.

(vi) Employees whose blood lead levels do not adequately decline within eighteen months of removal. The employer shall take the following measures with respect to any employee removed from exposure to lead due to an elevated blood lead level whose blood lead level has not declined within the past eighteen months of removal so that the employee has been returned to his or her former job status:

(A) The employer shall make available to the employee a medical examination pursuant to this section to obtain a final medical determination with respect to the employee;

(B) The employer shall assure that the final medical determination obtained indicates whether or not the employee may be returned to his or her former job status, and if not, what steps should be taken to protect the employee's health;

(C) Where the final medical determination has not yet been obtained, or once obtained indicates that the employee may not yet be returned to his or her former job status, the employer shall continue to provide medical removal protection benefits to the employee until either the employee is returned to former job status, or a final medical determination is made that the employee is incapable of ever safely returning to his or her former job status.

(D) Where the employer acts pursuant to a final medical determination which permits the return of the employee to his or her former job status despite what would otherwise be an unacceptable blood lead level, later questions concerning removing the employee again shall be decided by a final medical determination. The employer need not automatically remove such an employee pursuant to the blood lead level removal criteria provided by this section.

(vii) Voluntary removal or restriction of an employee. Where an employer, although not required by this section to do so, removes an employee from exposure to lead or otherwise places limitations on an employee due to the effects of lead exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by item (12)(b)(i) of this section.

(13) Employee information and training.

(a) Training program.

(i) Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the content of Appendices A and B of this regulation.

(ii) The employer shall institute a training program for and assure the participation of all employees who are subject

to exposure to lead at or above the action level or for whom the possibility of skin or eye irritation exists.

(iii) The employer shall provide initial training by one hundred eighty days from the effective date for those employees covered by item (13)(a)(ii) on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this subsection.

(iv) The training program shall be repeated at least annually for each employee.

(v) The employer shall assure that each employee is informed of the following:

(A) The content of this standard and its appendices;

(B) The specific nature of the operations which could result in exposure to lead above the action level;

(C) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by chapter 296-62 WAC, Part E;

(D) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females);

(E) The engineering controls and work practices associated with the employee's job assignment;

(F) The contents of any compliance plan in effect; and

(G) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.

(b) Access to information and training materials.

(i) The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(iii) In addition to the information required by item (13)(a)(v), the employer shall include as part of the training program, and shall distribute to employees, any materials pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to the act, and this lead standard, which are made available to the employer by the director.

(14) Signs.

(a) General.

(i) The employer may use signs required by other statutes, regulations or ordinances in addition to, or in combination with, signs required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign required by this subsection which contradicts or detracts from the meaning of the required sign.

(b) Signs.

(i) The employer shall post the following warning signs in each work area where the PEL is exceeded:

WARNING
LEAD WORK AREA

POISON
NO SMOKING OR EATING

(ii) The employer shall assure that signs required by this subsection are illuminated and cleaned as necessary so that the legend is readily visible.

(15) Recordkeeping.

(a) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required in subsection (5) of this section.

(ii) This record shall include:

(A) The date(s), number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;

(B) A description of the sampling and analytical methods used and evidence of their accuracy;

(C) The type of respiratory protective devices worn, if any;

(D) Name, social security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent; and

(E) The environmental variables that could affect the measurement of employee exposure.

(iii) The employer shall maintain these monitoring records for at least forty years or for the duration of employment plus twenty years, whichever is longer.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by subsection (11) of this section.

(ii) This record shall include:

(A) The name, social security number, and description of the duties of the employee;

(B) A copy of the physician's written opinions;

(C) Results of any airborne exposure monitoring done for that employee and the representative exposure levels supplied to the physician; and

(D) Any employee medical complaints related to exposure to lead.

(iii) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(A) A copy of the medical examination results including medical and work history required under subsection (11) of this section;

(B) A description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information; and

(C) A copy of the results of biological monitoring.

(iv) The employer shall maintain or assure that the physician maintains those medical records for at least forty years, or for the duration of employment plus twenty years, whichever is longer.

(c) Medical removals.

(i) The employer shall establish and maintain an accurate record for each employee removed from current exposure to lead pursuant to subsection (12) of this section.

(ii) Each record shall include:

(A) The name and social security number of the employee;

(B) The date on each occasion that the employee was removed from current exposure to lead as well as the corresponding date on which the employee was returned to his or her former job status;

(C) A brief explanation of how each removal was or is being accomplished; and

(D) A statement with respect to each removal indicating whether or not the reason for the removal was an elevated blood lead level.

(iii) The employer shall maintain each medical removal record for at least the duration of an employee's employment.

(d) Availability.

(i) The employer shall make available upon request all records required to be maintained by subsection (15) of this section to the director for examination and copying.

(ii) Environmental monitoring, medical removal, and medical records required by this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with WAC 296-62-05201 through 296-62-05209 and 296-62-05213 through 296-62-05217. Medical removal records shall be provided in the same manner as environmental monitoring records.

(iii) Upon request, the employer shall make an employee's medical records required to be maintained by this section available to the affected employee or former employee or to a physician or other individual designated by such affected employee or former employees for examination and copying.

(e) Transfer of records.

(i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by subsection (15) of this section.

(ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records required to be maintained by this section for the prescribed period, these records shall be transmitted to the director.

(iii) At the expiration of the retention period for the records required to be maintained by this section, the employer shall notify the director at least three months prior to the disposal of such records and shall transmit those records to the director if requested within the period.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in WAC 296-62-05215.

(16) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to lead conducted pursuant to subsection (5) of this section.

(b) Observation procedures.

(i) Whenever observation of the monitoring of employee exposure to lead requires entry into an area where the use of respirators, protective clothing or equipment is required, the employer shall provide the observer with and assure the use of such respirators, clothing and such equipment, and shall require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the monitoring, observers shall be entitled to:

(A) Receive an explanation of the measurement procedures;

(B) Observe all steps related to the monitoring of lead performed at the place of exposure; and

(C) Record the results obtained or receive copies of the results when returned by the laboratory.

(17) Appendices. The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation.

(a) Appendix A. Substance Data Sheet for Occupational Exposure to Lead.

(i) Substance identification.

(A) Substance. Pure lead (Pb) is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with various other substances to form numerous lead compounds.

(B) Compounds covered by the standard. The word "lead" when used in this standard means elemental lead, all inorganic lead compounds (except those which are not biologically available due to either solubility or specific chemical interaction), and a class of organic lead compounds called lead soaps. This standard does not apply to other organic lead compounds.

(C) Uses. Exposure to lead occurs in at least 120 different occupations, including primary and secondary lead smelting, lead storage battery manufacturing, lead pigment manufacturing and use, solder manufacturing and use, shipbuilding and ship repairing, auto manufacturing, and printing.

(D) Permissible exposure. The Permissible Exposure Limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air ($50 \mu\text{g}/\text{m}^3$), averaged over an eight-hour work day.

(E) Action level. The standard establishes an action level of 30 micrograms per cubic meter of air ($30 \mu\text{g}/\text{m}^3$) time weighted average, based on an eight-hour work day. The action level initiates several requirements of the standard, such as exposure monitoring, medical surveillance, and training and education.

(ii) Health hazard data.

(A) Ways in which lead enters your body.

(I) When absorbed into your body in certain doses lead is a toxic substance. The object of the lead standard is to prevent absorption of harmful quantities of lead. The standard is intended to protect you not only from the immediate toxic effects of lead, but also from the serious toxic effects that may not become apparent until years of exposure have passed.

(II) Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skin. When lead is scattered in the air as a dust, fume or mist, it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes,

chewing tobacco, or make-up which have lead on them or handle them with hands contaminated with lead, this will contribute to ingestion.

(III) A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood stream lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in your blood and other tissue. As exposure to lead continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

(B) Effects of overexposure to lead.

(I) Short-term (acute) overexposure. Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short-term dose of lead can lead to acute encephalopathy. Short-term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems, and causes forms of health impairment and disease which arise after periods of exposure as short as days or as long as several years.

(II) Long-term (chronic) overexposure.

a) Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain.

b) Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy.

c) Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often

too late to correct or prevent worsening conditions, and progression of kidney dialysis or death is possible.

d) Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood.

e) Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

(III) Health protection goals of the standard.

a) Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that worker blood lead (PbB) levels be maintained at or below forty micrograms per one hundred grams of whole blood (40 $\mu\text{g}/100\text{g}$). The blood lead levels of workers (both male and female workers) who intend to have children should be maintained below 30 $\mu\text{g}/100\text{g}$ to minimize adverse reproductive health effects to the parents and to the developing fetus.

b) The measurement of your blood lead level is the most useful indicator of the amount of lead absorbed by your body. Blood lead levels (PbB) are most often reported in units of milligrams (mg) or micrograms (μg) of lead (1 mg=1000 μg) per 100 grams (100g), 100 milliliters (100 ml) or deciliter (dl) of blood. These three units are essentially the same. Sometimes PbB's are expressed in the form of mg% or $\mu\text{g}\%$. This is a shorthand notation for 100g, 100ml, or dl.

c) PbB measurements show the amount of lead circulating in your blood stream, but do not give any information about the amount of lead stored in your various tissues. PbB measurements merely show current absorption of lead, not the effect that lead is having on your body or the effects that past lead exposure may have already caused. Past research into lead-related diseases, however, has focused heavily on associations between PbBs and various diseases. As a result, your PbB is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

d) Once your blood lead level climbs above 40 $\mu\text{g}/100\text{g}$, your risk of disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular PbB in a given person will cause a particular effect. Studies have associated fatal encephalopathy with PbBs as low as 150 $\mu\text{g}/100\text{g}$. Other studies have shown other forms of disease in some workers with PbBs well below 80 $\mu\text{g}/100\text{g}$.

Your PbB is a crucial indicator of the risks to your health, but one other factor is extremely important. This factor is the length of time you have had elevated PbBs. The longer you have an elevated PbB, the greater the risk that large quantities of lead are being gradually stored in your organs and tissues (body burden). The greater your overall body burden, the greater the chances of substantial permanent damage.

e) The best way to prevent all forms of lead-related impairments and diseases—both short-term and long-term—is to maintain your PbB below 40 $\mu\text{g}/100\text{g}$. The provisions of the standard are designed with this end in mind. Your employer has prime responsibility to assure that the provisions of the standard are complied with both by the company and by individual workers. You as a worker, however, also have a responsibility to assist your employer in complying with the standard. You can play a key role in protecting your own health by learning about the lead hazards and their control, learning what the standard requires, following the standard where it governs your own action, and seeing that your employer complies with the provisions governing his actions.

(IV) Reporting signs and symptoms of health problems. You should immediately notify your employer if you develop signs or symptoms associated with lead poisoning or if you desire medical advice concerning the effects of current or past exposure to lead on your ability to have a healthy child. You should also notify your employer if you have difficulty breathing during a respirator fit test or while wearing a respirator. In each of these cases your employer must make available to you appropriate medical examinations or consultations. These must be provided at no cost to you and at a reasonable time and place.

(b) Appendix B. Employee Standard Summary. This appendix summarizes key provisions of the standard that you as a worker should become familiar with. The appendix discusses the entire standard.

(i) Permissible exposure limit (PEL). The standard sets a permissible exposure limit (PEL) of fifty micrograms of lead per cubic meter of air ($50 \mu\text{g}/\text{m}^3$), averaged over an eight-hour workday. This is the highest level of lead in air to which you may be permissibly exposed over an eight-hour workday. Since it is an eight-hour average it permits short exposures above the PEL so long as for each eight-hour workday your average exposure does not exceed the PEL.

(ii) Exposure monitoring.

(A) If lead is present in the work place where you work in any quantity, your employer is required to make an initial determination of whether the action level is exceeded for any employee. The initial determination must include instrument monitoring of the air for the presence of lead and must cover the exposure of a representative number of employees who are reasonably believed to have the highest exposure levels. If your employer has conducted appropriate air sampling for lead in the past year he may use these results. If there have been any employee complaints of symptoms which may be attributable to exposure to lead or if there is any other information or observations which would indicate employee exposure to lead, this must also be considered as part of the initial determination. If this initial determination shows that a reasonable possibility exists that any employee may be exposed, without regard to respirators, over the action level ($30 \mu\text{g}/\text{m}^3$)

your employer must set up an air monitoring program to determine the exposure level of every employee exposed to lead at your work place.

(B) In carrying out this air monitoring program, your employer is not required to monitor the exposure of every employee, but he or she must monitor a representative number of employees and job types. Enough sampling must be done to enable each employee's exposure level to be reasonably represented by at least one full shift (at least seven hours) air sample. In addition, these air samples must be taken under conditions which represent each employee's regular, daily exposure to lead.

(C) If you are exposed to lead and air sampling is performed, your employer is required to quickly notify you in writing of air monitoring results which represent your exposure. If the results indicate your exposure exceeds the PEL (without regard to your use of respirators), then your employer must also notify you of this in writing, and provide you with a description of the corrective action that will be taken to reduce your exposure.

(D) Your exposure must be rechecked by monitoring every six months if your exposure is over the action level but below the PEL. Air monitoring must be repeated every three months if you are exposed over the PEL. Your employer may discontinue monitoring for you if two consecutive measurements, taken at least two weeks apart, are below the action level. However, whenever there is a production, process, control, or personnel change at your work place which may result in new or additional exposure to lead, or whenever there is any other reason to suspect a change which may result in new or additional exposure to lead, your employer must perform additional monitoring.

(iii) Methods of compliance. Your employer is required to assure that no employee is exposed to lead in excess of the PEL. The standard establishes a priority of methods to be used to meet the PEL.

(iv) Respiratory protection.

(A) Your employer is required to provide and assure your use of respirators when your exposure to lead is not controlled below the PEL by other means. The employer must pay the cost of the respirator. Whenever you request one, your employer is also required to provide you a respirator even if your air exposure level does not exceed the PEL. You might desire a respirator when, for example, you have received medical advice that your lead absorption should be decreased. Or, you may intend to have children in the near future, and want to reduce the level of lead in your body to minimize adverse reproductive effects. While respirators are the least satisfactory means of controlling your exposure, they are capable of providing significant protection if properly chosen, fitted, worn, cleaned, maintained, and replaced when they stop providing adequate protection.

(B) Your employer is required to select respirators from the seven types listed in Table II of the respiratory protection section of this standard (see subsection (7)(c) of this section). Any respirator chosen must be certified by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84. This respirator selection table will enable your employer to choose a type of respirator which will give you a proper amount of protection based on

your airborne lead exposure. Your employer may select a type of respirator that provides greater protection than that required by the standard; that is, one recommended for a higher concentration of lead than is present in your work place. For example, a powered air purifying respirator (PAPR) is much more protective than a typical negative-pressure respirator, and may also be more comfortable to wear. A PAPR has a filter, cartridge or canister to clean the air, and a power source which continuously blows filtered air into your breathing zone. Your employer might make a PAPR available to you to ease the burden of having to wear a respirator for long periods of time. The standard provides that you can obtain a PAPR upon request.

(C) Your employer must also start a respiratory protection program. This program must include written procedures for the proper selection, use, cleaning, storage, and maintenance of respirators.

(D) Your employer must assure that your respirator facepiece fits properly. Proper fit of a respirator facepiece is critical to your protection against air borne lead. Obtaining a proper fit on each employee may require your employer to make available several different types of respirator masks. To ensure that your respirator fits properly and that facepiece leakage is minimal, your employer must give you either a qualitative or quantitative fit test as required in chapter 296-62 WAC, Part E.

(E) You must also receive from your employer proper training in the use of respirators. Your employer is required to teach you how to wear a respirator, to know why it is needed, and to understand its limitations.

(F) The standard provides that if your respirator uses filter elements, you must be given an opportunity to change the filter elements whenever an increase in breathing resistance is detected. You also must be permitted to periodically leave your work area to wash your face and respirator facepiece whenever necessary to prevent skin irritation. If you ever have difficulty breathing during a fit test or while using a respirator, your employer must make a medical examination available to you to determine whether you can safely wear a respirator. The result of this examination may be to give you a positive pressure respirator (which reduces breathing resistance) or to provide alternative means of protection.

(v) Protective work clothing and equipment. If you are exposed to lead above the PEL, or if you are exposed to lead compounds such as lead arsenate or lead azide which can cause skin and eye irritation, your employer must provide you with protective work clothing and equipment appropriate for the hazard. If work clothing is provided, it must be provided in a clean and dry condition at least weekly, and daily if your airborne exposure to lead is greater than 200 $\mu\text{g}/\text{m}^3$. Appropriate protective work clothing and equipment can include coveralls or similar full-body work clothing, gloves, hats, shoes or disposable shoe coverlets, and face shields or vented goggles. Your employer is required to provide all such equipment at no cost to you. He or she is responsible for providing repairs and replacement as necessary and also is responsible for the cleaning, laundering or disposal of protective clothing and equipment. Contaminated work clothing or equipment must be removed in change rooms and not worn home or you will extend your exposure and expose your fam-

ily since lead from your clothing can accumulate in your house, car, etc. Contaminated clothing which is to be cleaned, laundered or disposed of must be placed in closed containers in the change room. At no time may lead be removed from protective clothing or equipment by any means which disperses lead into the work room air.

(vi) Housekeeping. Your employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. Vacuuming is the preferred method of meeting this requirement, and the use of compressed air to clean floors and other surfaces is absolutely prohibited. Dry or wet sweeping, shoveling, or brushing may not be used except where vacuuming or other equally effective methods have been tried and do not work. Vacuums must be used and emptied in a manner which minimizes the reentry of lead into the work place.

(vii) Hygiene facilities and practices.

(A) The standard requires that change rooms, showers and filtered air lunchrooms be constructed and made available to workers exposed to lead above the PEL. When the PEL is exceeded, the employer must assure that food and beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, except in these facilities. Change rooms, showers and lunchrooms, must be used by workers exposed in excess of the PEL. After showering, no clothing or equipment worn during the shift may be worn home and this includes shoes and underwear. Your own clothing worn during the shift should be carried home and cleaned carefully so that it does not contaminate your home. Lunchrooms may not be entered with protective clothing or equipment unless surface dust has been removed by vacuuming, downdraft booth or other cleaning methods. Finally, workers exposed above the PEL must wash both their hands and faces prior to eating, drinking, smoking or applying cosmetics.

(B) All of the facilities and hygiene practices just discussed are essential to minimize additional sources of lead absorption from inhalation or ingestion of lead that may accumulate on you, your clothes or your possessions. Strict compliance with these provisions can virtually eliminate several sources of lead exposure which significantly contribute to excessive lead absorption.

(viii) Medical surveillance.

(A) The medical surveillance program is part of the standard's comprehensive approach to the prevention of lead-related disease. Its purpose is to supplement the main thrust of the standard which is aimed at minimizing airborne concentrations of lead and sources of ingestion. Only medical surveillance can determine if the other provisions of the standard have effectively protected you as an individual. Compliance with the standard's provision will protect most workers from the adverse effects of lead exposure, but may not be satisfactory to protect individual workers (I) who have high body burdens of lead acquired over past years, (II) who have additional uncontrolled sources of nonoccupational lead exposure, (III) who exhibit unusual variations in lead absorption rates, or (IV) who have specific nonwork related medical conditions which could be aggravated by lead exposure (e.g., renal disease, anemia). In addition, control systems may fail, or hygiene and respirator programs may be inadequate. Peri-

odic medical surveillance of individual workers will help detect those failures. Medical surveillance will also be important to protect your reproductive ability - regardless of whether you are a man or a woman.

(B) All medical surveillance required by the standard must be performed by or under the supervision of a licensed physician. The employer must provide required medical surveillance without cost to employees and at a reasonable time and place. The standard's medical surveillance program has two parts - periodic biological monitoring, and medical examinations.

(C) Your employer's obligation to offer medical surveillance is triggered by the results of the air monitoring program. Medical surveillance must be made available to all employees who are exposed in excess of the action level for more than 30 days a year. The initial phase of the medical surveillance program, which included blood lead level tests and medical examinations, must be completed for all covered employees no later than 180 days from the effective date of this standard. Priority within this first round of medical surveillance must be given to employees whom the employer believes to be at greatest risk from continued exposure (for example, those with the longest prior exposure to lead, or those with the highest current exposure). Thereafter, the employer must periodically make medical surveillance - both biological monitoring and medical examinations - available to all covered employees.

(D) Biological monitoring under the standard consists of blood lead level (PbB) and zinc protoporphyrin tests at least every six months after the initial PbB test. A zinc protoporphyrin (ZPP) test is a very useful blood test which measures an effect of lead on your body. If a worker's PbB exceeds 40 $\mu\text{g}/100\text{g}$, the monitoring frequency must be increased from every six months to at least every two months and not reduced until two consecutive PbBs indicate a blood lead level below 40 $\mu\text{g}/100\text{g}$. Each time your PbB is determined to be over 40 $\mu\text{g}/100\text{g}$, your employer must notify you of this in writing within five working days of the receipt of the test results. The employer must also inform you that the standard requires temporary medical removal with economic protection when your PbB exceeds certain criteria (see Discussion of Medical Removal Protection - subsection (12)). During the first year of the standard, this removal criterion is 80 $\mu\text{g}/100\text{g}$. Anytime your PbB exceeds 80 $\mu\text{g}/100\text{g}$ your employer must make available to you a prompt follow-up PbB test to ascertain your PbB. If the two tests both exceed 80 $\mu\text{g}/100\text{g}$ and you are temporarily removed, then your employer must make successive PbB tests available to you on a monthly basis during the period of your removal.

(E) Medical examinations beyond the initial one must be made available on an annual basis if your blood lead levels exceeds 40 $\mu\text{g}/100\text{g}$ at any time during the preceding year. The initial examination will provide information to establish a baseline to which subsequent data can be compared. An initial medical examination must also be made available (prior to assignment) for each employee being assigned for the first time to an area where the airborne concentration of lead equals or exceeds the action level. In addition, a medical examination or consultation must be made available as soon

as possible if you notify your employer that you are experiencing signs or symptoms commonly associated with lead poisoning or that you have difficulty breathing while wearing a respirator or during a respirator fit test. You must also be provided a medical examination or consultation if you notify your employer that you desire medical advice concerning the effects of current or past exposure to lead on your ability to procreate a healthy child.

(F) Finally, appropriate follow-up medical examinations or consultations may also be provided for employees who have been temporarily removed from exposure under the medical removal protection provisions of the standard (see item (ix) below).

(G) The standard specifies the minimum content of pre-assignment and annual medical examinations. The content of other types of medical examinations and consultations is left up to the sound discretion of the examining physician. Pre-assignment and annual medical examinations must include (I) a detailed work history and medical history, (II) a thorough physical examination, and (III) a series of laboratory tests designed to check your blood chemistry and your kidney function. In addition, at any time upon your request, a laboratory evaluation of male fertility will be made (microscopic examination of a sperm sample), or a pregnancy test will be given.

(H) The standard does not require that you participate in any of the medical procedures, tests, etc., which your employer is required to make available to you. Medical surveillance can, however, play a very important role in protecting your health. You are strongly encouraged, therefore, to participate in a meaningful fashion. Generally, your employer will choose the physician who conducts medical surveillance under the lead standard - unless you and your employer can agree on the choice of a physician or physicians. Some companies and unions have agreed in advance, for example, to use certain independent medical laboratories or panels of physicians. Any of these arrangements are acceptable so long as required medical surveillance is made available to workers.

(I) The standard requires your employer to provide certain information to a physician to aid in his or her examination of you. This information includes (I) the standard and its appendices, (II) a description of your duties as they relate to lead exposure, (III) your exposure level, (IV) a description of personal protective equipment you wear, (V) prior blood level results, and (VI) prior written medical opinions concerning you that the employer has. After a medical examination or consultation the physician must prepare a written report which must contain (I) the physician's opinion as to whether you have any medical conditions which places you at increased risk of material impairment to health from exposure to lead, (II) any recommended special protective measures to be provided to you, (III) any blood lead level determinations, and (IV) any recommended limitation on your use of respirators. This last element must include a determination of whether you can wear a powered air purifying respirator (PAPR) if you are found unable to wear a negative pressure respirator.

(J) The medical surveillance program of the lead standard may at some point in time serve to notify certain work-

ers that they have acquired a disease or other adverse medical condition as a result of occupational lead exposure. If this is true these workers might have legal rights to compensation from public agencies, their employers, firms that supply hazardous products to their employers, or other persons. Some states have laws, including worker compensation laws, that disallow a worker to learn of a job-related health impairment to sue, unless the worker sues within a short period of time after learning of the impairment. (This period of time may be a matter of months or years.) An attorney can be consulted about these possibilities. It should be stressed that WISHA is in no way trying to either encourage or discourage claims or lawsuits. However, since results of the standard's medical surveillance program can significantly affect the legal remedies of a worker who has acquired a job-related disease or impairment, it is proper for WISHA to make you aware of this.

(K) The medical surveillance section of the standard also contains provisions dealing with chelation. Chelation is the use of certain drugs (administered in pill form or injected into the body) to reduce the amount of lead absorbed in body tissues. Experience accumulated by the medical and scientific communities has largely confirmed the effectiveness of this type of therapy for the treatment of very severe lead poisoning. On the other hand it has also been established that there can be a long list of extremely harmful side effects associated with the use of chelating agents. The medical community has balanced the advantages and disadvantages resulting from the use of chelating agents in various circumstances and has established when the use of these agents is acceptable. The standard includes these accepted limitations due to a history of abuse of chelation therapy by some lead companies. The most widely used chelating agents are calcium disodium EDTA, (Ca Na₂EDTA), Calcium Disodium Versenate (Versenate), and d-penicillamine (penicillamine or Cupramine).

(L) The standard prohibits "prophylactic chelation" of any employee by any person the employer retains, supervises or controls. "Prophylactic chelation" is the routine use of chelating or similarly acting drugs to prevent elevated blood levels in workers who are occupationally exposed to lead, or the use of these drugs to routinely lower blood lead levels to predesignated concentrations believed to be safe. It should be emphasized that where an employer takes a worker who has no symptoms of lead poisoning and has chelation carried out by a physician (either inside or outside of a hospital) solely to reduce the worker's blood lead level, that will generally be considered prophylactic chelation. The use of a hospital and a physician does not mean that prophylactic chelation is not being performed. Routine chelation to prevent increased or reduce current blood lead levels is unacceptable whatever the setting.

(M) The standard allows the use of "therapeutic" or "diagnostic" chelation if administered under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring. Therapeutic chelation responds to severe lead poisoning where there are marked symptoms. Diagnostic chelation, involves giving a patient a dose of the drug then collecting all urine excreted for some period of time as an aid to the diagnosis of lead poisoning.

(N) In cases where the examining physician determines that chelation is appropriate, you must be notified in writing of this fact before such treatment. This will inform you of a potentially harmful treatment, and allow you to obtain a second opinion.

(ix) Medical removal protection.

(A) Excessive lead absorption subjects you to increased risk of disease. Medical removal protection (MRP) is a means of protecting you when for whatever reasons, other methods, such as engineering controls, work practices, and respirators, have failed to provide the protection you need. MRP involves the temporary removal of a worker from his or her regular job to a place of significantly lower exposure without any loss of earnings, seniority, or other employment rights of benefits. The purpose of this program is to cease further lead absorption and allow your body to naturally excrete lead which has previously been absorbed. Temporary medical removal can result from an elevated blood lead level, or a medical opinion. Up to eighteen months of protection is provided as a result of either form of removal. The vast majority of removed workers, however, will return to their former jobs long before this eighteen month period expires. The standard contains special provisions to deal with the extraordinary but possible case where a long-term worker's blood lead level does not adequately decline during eighteen months of removal.

(B) During the first year of the standard, if your blood lead level is 80 µg/100g or above you must be removed from any exposure where your air lead level without a respirator would be 100 µg/m³ or above. If you are removed from your normal job you may not be returned until your blood lead level declines to at least 60 µg/100g. These criteria for removal and return will change according to the following schedule:

TABLE 1

Effective Date	Removal Blood Level (µg/100g)	Air Lead (µg/m ³)	Return Blood Lead (µg/100g)
9/6/81	At or above 70	50 or above	At or below 50
9/6/82	At or above 60	30 or above	At or below 40
9/6/84	At or above 50	30 or above	At or below 40
	averaged over six months		

(C) You may also be removed from exposure even if your blood lead levels are below these criteria if a final medical determination indicates that you temporarily need reduced lead exposure for medical reasons. If the physician who is implementing your employer's medical program makes a final written opinion recommending your removal or other special protective measures, your employer must implement the physician's recommendation. If you are removed in this manner, you may only be returned when the physician indicates it is safe for you to do so.

(D) The standard does not give specific instructions dealing with what an employer must do with a removed worker. Your job assignment upon removal is a matter for you, your employer and your union (if any) to work out consistent with existing procedures for job assignments. Each removal must be accomplished in a manner consistent with existing collective bargaining relationships. Your employer is given broad

discretion to implement temporary removals so long as no attempt is made to override existing agreements. Similarly, a removed worker is provided no right to veto an employer's choice which satisfies the standard.

(E) In most cases, employers will likely transfer removed employees to other jobs with sufficiently low lead exposure. Alternatively, a worker's hours may be reduced so that the time weighted average exposure is reduced, or he or she may be temporarily laid off if no other alternative is feasible.

(F) In all of these situations, MRP benefits must be provided during the period of removal - i.e., you continue to receive the same earnings, seniority, and other rights and benefits you would have had if you had not been removed. Earnings include more than just your base wage; it includes overtime, shift differentials, incentives, and other compensation you would have earned if you had not been removed. During the period of removal you must also be provided with appropriate follow-up medical surveillance. If you were removed because your blood lead level was too high, you must be provided with a monthly blood test. If a medical opinion caused your removal, you must be provided medical tests or examinations that the physician believes to be appropriate. If you do not participate in this follow-up medical surveillance, you may lose your eligibility for MRP benefits.

(G) When you are medically eligible to return to your former job, your employer must return you to your "former job status." This means that you are entitled to the position, wages, benefits, etc., you would have had if you had not been removed. If you would still be in your old job if no removal had occurred, that is where you go back. If not, you are returned consistent with whatever job assignment discretion your employer would have had if no removal had occurred. MRP only seeks to maintain your rights, not expand them or diminish them.

(H) If you are removed under MRP and you are also eligible for worker compensation or other compensation for lost wages, your employer's MRP benefits obligation is reduced by the amount that you actually receive from these other sources. This is also true if you obtain other employment during the time you are laid off with MRP benefits.

(I) The standard also covers situations where an employer voluntarily removes a worker from exposure to lead due to the effects of lead on the employee's medical condition, even though the standard does not require removal. In these situations MRP benefits must still be provided as though the standard required removal. Finally, it is important to note that in all cases where removal is required, respirators cannot be used as a substitute. Respirators may be used before removal becomes necessary, but not as an alternative to a transfer to a low exposure job, or to a lay-off with MRP benefits.

(x) Employee information and training.

(A) Your employer is required to provide an information and training program for all employees exposed to lead above the action level or who may suffer skin or eye irritation from lead. This program must inform these employees of the specific hazards associated with their work environment, protective measures which can be taken, the danger of lead to their bodies (including their reproductive systems), and their rights

under the standard. In addition, your employer must make readily available to all employees, including those exposed below the action level, a copy of the standard and its appendices and must distribute to all employees any materials provided to the employer under the Washington Industrial Safety and Health Act (WISHA).

(B) Your employer is required to complete this training for all employees by March 4, 1981. After this date, all new employees must be trained prior to initial assignment to areas where there is possibility of exposure over the action level. This training program must also be provided at least annually thereafter.

(xi) Signs. The standard requires that the following warning sign be posted in work areas where the exposure to lead exceeds the PEL:

WARNING
LEAD WORK AREA
NO SMOKING OR EATING

(xii) Recordkeeping.

(A) Your employer is required to keep all records of exposure monitoring for airborne lead. These records must include the name and job classification of employees measured, details of the sampling and analytic techniques, the results of this sampling and the type of respiratory protection being worn by the person sampled. Your employer is also required to keep all records of biological monitoring and medical examination results. These must include the names of the employees, the physician's written opinion and a copy of the results of the examination. All of the above kinds of records must be kept for 40 years, or for at least 20 years after your termination of employment, whichever is longer.

(B) Recordkeeping is also required if you are temporarily removed from your job under the MRP program. This record must include your name and social security number, the date of your removal and return, how the removal was or is being accomplished, and whether or not the reason for the removal was an elevated blood lead level. Your employer is required to keep each medical removal record only for as long as the duration of an employee's employment.

(C) The standard requires that if you request to see or copy environmental monitoring, blood lead level monitoring, or medical removal records, they must be made available to you or to a representative that you authorize. Your union also has access to these records. Medical records other than PbBs must also be provided to you upon request, to your physician or to any other person whom you may specifically designate. Your union does not have access to your personal medical records unless you authorize their access.

(xiii) Observations of monitoring. When air monitoring for lead is performed at your work place as required by this standard, your employer must allow you or someone you designate to act as an observer of the monitoring. Observers are entitled to an explanation of the measurement procedure, and to record the results obtained. Since results will not normally be available at the time of the monitoring, observers are entitled to record or receive the results of the monitoring when returned by the laboratory. Your employer is required to provide the observer with any personal protective devices required to be worn by employees working in the areas that is

being monitored. The employer must require the observer to wear all such equipment and to comply with all other applicable safety and health procedures.

(xiv) Effective date. The standard's effective date is September 6, 1980, and the employer's obligation under the standard begin to come into effect as of that date. The standard was originally adopted as WAC 296-62-07349 and later recodified to WAC 296-62-07521.

(c) Appendix C. Medical Surveillance Guidelines.

(i) Introduction.

(A) The primary purpose of the Washington Industrial Safety and Health Act of 1973 is to assure, so far as possible, safe and healthful working conditions for every working man and woman. The occupational health standard for inorganic lead* was promulgated to protect workers exposed to inorganic lead including metallic lead, all inorganic lead compounds and organic lead soaps.

*The term inorganic lead used throughout the medical surveillance appendices is meant to be synonymous with the definition of lead set forth in the standard.

(B) Under this final standard in effect as of September 6, 1980, occupational exposure to inorganic lead is to be limited to 50 $\mu\text{g}/\text{m}^3$ (micrograms per cubic meter) based on an eight-hour time-weighted average (TWA). This level of exposure eventually must be achieved through a combination of engineering, work practice and other administrative controls. Periods of time ranging from one to ten years are provided for different industries to implement these controls which are based on individual industry considerations. Until these controls are in place, respirators must be used to meet the 50 $\mu\text{g}/\text{m}^3$ exposure limit.

(C) The standard also provides for a program of biological monitoring and medical surveillance for all employees exposed to levels of inorganic lead above the action level of 30 $\mu\text{g}/\text{m}^3$ for more than thirty days per year.

(D) The purpose of this document is to outline the medical surveillance provisions of the standard for inorganic lead, and to provide further information to the physician regarding the examination and evaluation of workers exposed to inorganic lead.

(E) Item (ii) provides a detailed description of the monitoring procedure including the required frequency of blood testing for exposed workers, provisions for medical removal protection (MRP), the recommended right of the employee to a second medical opinion, and notification and recordkeeping requirements of the employer. A discussion of the requirements for respirator use and respirator monitoring and WISHA's position on prophylactic chelation therapy are also included in this section.

(F) Item (iii) discusses the toxic effects and clinical manifestations of lead poisoning and effects of lead intoxication on enzymatic pathways in heme synthesis. The adverse effects on both male and female reproductive capacity and on the fetus are also discussed.

(G) Item (iv) outlines the recommended medical evaluation of the worker exposed to inorganic lead including details of the medical history, physical examination, and recommended laboratory tests, which are based on the toxic effects of lead as discussed in item (ii).

(H) Item (v) provides detailed information concerning the laboratory tests available for the monitoring of exposed workers. Included also is a discussion of the relative value of each test and the limitations and precautions which are necessary in the interpretation of the laboratory results.

(I) Airborne levels to be achieved without reliance or respirator protection through a combination of engineering and work practice or other administrative controls are illustrated in the following table:

Industry	Permissible Lead Level/Compliance Date		
	200 $\mu\text{g}/\text{m}^3$	100 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
Primary Lead Production	1973	06/29/84	06/29/91
Secondary Lead Production	1973	06/29/84	06/29/91
Lead Acid Battery Manufacturing	1973	06/29/83	06/29/91
Automobile Mfg./Solder, Grinding	1973	N/A	03/08/97
Electronics, Gray Iron Foundries, Ink Mfg., Paints and Coatings Mfg., Can Mfg., Wallpaper Mfg., and Printing.	1973	N/A	06/29/91
Lead Chemical Mfg., Non-ferrous Foundries, Leaded Steel Mfg., Battery Breaking in the Collection and Processing of Scrap (when not a part of secondary lead smelter) Secondary Copper Smelter, Brass and Bronze Ingot Production.	1973	N/A	N/A ^{1*}
All Other Industries	1973	N/A	09/08/92

* Feasibility of achieving the PEL by engineering and work practice controls for these industries has yet to be resolved in court, therefore no date has been scheduled.

(ii) Medical surveillance and monitoring requirements for workers exposed to inorganic lead.

(A) Under the occupational health standard for inorganic lead, a program of biological monitoring and medical surveillance is to be made available to all employees exposed to lead above the action level of 30 $\mu\text{g}/\text{m}^3$ TWA for more than thirty days each year. This program consists of periodic blood sampling and medical evaluation to be performed on a schedule which is defined by previous laboratory results, worker complaints or concerns, and the clinical assessment of the examining physician.

(B) Under this program, the blood lead level of all employees who are exposed to lead above the action level of 30 $\mu\text{g}/\text{m}^3$ is to be determined at least every six months. The frequency is increased to every two months for employees whose last blood lead level was between 40 $\mu\text{g}/100\text{g}$ whole blood and the level requiring employee medical removal to be discussed below. For employees who are removed from exposure to lead due to an elevated blood lead, a new blood lead level must be measured monthly. Zinc protoporphyrin (ZPP) measurement is required on each occasion that a blood lead level measurement is made.

(C) An annual medical examination and consultation performed under the guidelines discussed in item (iv) is to be made available to each employee for whom a blood test conducted at any time during the preceding twelve months indicated a blood lead level at or above 40 $\mu\text{g}/100\text{g}$. Also, an examination is to be given to all employees prior to their

assignment to an area in which airborne lead concentrations reach or exceed the action level. In addition, a medical examination must be provided as soon as possible after notification by an employee that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice regarding lead exposure and the ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during respirator use. An examination is also to be made available to each employee removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited or specially protected pursuant to medical recommendations.

(D) Results of biological monitoring or the recommendations of an examining physician may necessitate removal of an employee from further lead exposure pursuant to the standard's medical removal program (MRP). The object of the MRP program is to provide temporary medical removals to workers either with substantially elevated blood lead levels or otherwise at risk of sustaining material health impairment from continued substantial exposure to lead. The following guidelines which are summarized in Table 10 were created under the standard for the temporary removal of an exposed employee and his or her subsequent return to work in an exposure area.

TABLE 10

		EFFECTIVE DATE				
		Sept. 6, 1980	Sept. 6, 1981	Sept. 6, 1982	Sept. 6, 1983	Sept. 6, 1984
A.	Blood lead level requiring employee medical removal (level must be confirmed with second follow-up blood lead level within two weeks of first report).	>80 µg/100g.	>70 µg/100g.	>60 µg/100g.	>60 µg/100g.	>60 µg/100g or average of last three blood samples or all blood samples over previous 6 months (whichever is over a longer time period) is 50 µg/100g. or greater unless last sample is 40 µg/100g or less.
B.	Frequency which employees exposed is action level of lead (30 µg/m ³ TWA) must have blood lead level checked. (ZPP is also required in each occasion that a blood test is obtained):					
	1. Last blood lead level less than 40 µg/100g	Every 6 months.	Every 6 months.	Every 6 months.	Every 6 months.	Every 6 months.
	2. Last blood lead level between 40 µg/100g and level requiring medical removal (see A above)	Every 2 months.	Every 2 months.	Every 2 months.	Every 2 months.	Every 2 months.
	3. Employees removed from exposure to lead because of an elevated blood lead level.	Every 1 month.	Every 1 month.	Every 1 month.	Every 1 month.	Every 1 month.
C.	Permissible airborne exposure limit for workers removed from work due to an elevated blood lead level (without regard to respirator protection).	100 µg/m ³ 8 hr TWA	50 µg/m ³ 8 hr TWA	30 µg/m ³ 8 hr TWA	30 µg/m ³ 8 hr TWA	30 µg/m ³ 8 hr TWA
D.	Blood lead level confirmed with a second blood analysis, at which employee may return to work. Permissible exposure without regard to respirator protection is listed by industry in Table 1.	60 µg/100g	50 µg/100g	40 µg/100g	40 µg/100g	40 µg/100g

Note: Where medical opinion indicates that an employee is at risk of material impairment from exposure to lead, the physician can remove an employee from exposure exceeding the action level (or less) or recommend special protective measures as deemed appropriate and necessary. Medical monitoring during the medical removal period can be more stringent than noted in the table above if the physician so specifies. Return to work or removal of limitations and special protections is permitted when the physician indicates that the worker is no longer at risk of material impairment.

(E) Under the standard's ultimate worker removal criteria, a worker is to be removed from any work having any eight-hour TWA exposure to lead of 30 µg/m³ or more whenever either of the following circumstances apply. (I) a blood lead level of 60 µg/100g or greater is obtained and confirmed

by a second follow-up blood lead level performed within two weeks after the employer receives the results of the first blood sample test, or (II) the average of the previous three blood lead determinations or the average of all blood lead determinations conducted during the previous six months,

whichever encompasses the longest time period, equals or exceeds 50 $\mu\text{g}/100\text{g}$, unless the last blood sample indicates a blood lead level at or below 40 $\mu\text{g}/100\text{g}$, in which case the employee need not be removed. Medical removal is to continue until two consecutive blood lead levels are 40 $\mu\text{g}/100\text{g}$ or less.

(F) During the first two years that the ultimate removal criteria are being phased in, the return criteria have been set to assure that a worker's blood lead level has substantially declined during the period of removal. From March 1, 1979, to March 1, 1980, the blood lead level requiring employee medical removal is 80 $\mu\text{g}/100\text{g}$. Workers found to have a confirmed blood lead at this level or greater need only be removed from work having a daily eight hour TWA exposure to lead at or above 100 $\mu\text{g}/\text{m}^3$. Workers so removed are to be returned to work when their blood lead levels are at or below 60 $\mu\text{g}/100\text{g}$ of whole blood. From March 1, 1980, to March 1, 1981, the blood lead level requiring medical removal is 70 $\mu\text{g}/100\text{g}$. During this period workers need only be removed from jobs having a daily eight hour TWA exposure to lead at or above 50 $\mu\text{g}/\text{m}^3$ and are to be returned to work when a level of 50 $\mu\text{g}/100\text{g}$ is achieved. Beginning March 1, 1981, return depends on the worker's blood lead level declining to 40 $\mu\text{g}/100\text{g}$ of whole blood.

(G) As part of the standard, the employer is required to notify in writing each employee whose whole blood lead level exceeds 40 $\mu\text{g}/100\text{g}$. In addition, each such employee is to be informed that the standard requires medical removal with MRP benefits, discussed below, when an employee's blood lead level exceeds the above defined limits.

(H) In addition to the above blood lead level criteria, temporary worker removal may also take place as a result of medical determinations and recommendations. Written medical opinions must be prepared after each examination pursuant to the standard. If the examining physician includes medical finding, determination or opinion that the employee has a medical condition which places the employee at increased risk of material health impairment from exposure to lead, then the employee must be removed from exposure to lead at or above the action level. Alternatively, if the examining physician recommends special protective measures for an employee (e.g., use of a powered air purifying respirator) or recommends limitations on an employee's exposure to lead, then the employer must implement these recommendations. Recommendations may be more stringent than the specific provisions of the standard. The examining physician, therefore, is given broad flexibility to tailor special protective procedures to the needs of individual employees. This flexibility extends to the evaluation and management of pregnant workers and male and female workers who are planning to conceive children. Based on the history, physical examination, and laboratory studies, the physician might recommend special protective measures or medical removal for an employee who is pregnant or who is planning to conceive a child when, in the physician's judgment, continued exposure to lead at the current job would pose a significant risk. The return of the employee to his or her former job status, or the removal of special protections or limitations, depends upon the examining physician determining that the employee is no longer at

increased risk of material impairment or that the special measures are no longer needed.

(I) During the period of any form of special protection or removal, the employer must maintain the worker's earnings, seniority, and other employment rights and benefits (as though the worker has not been removed) for a period of up to eighteen months. This economic protection will maximize meaningful worker participation in the medical surveillance program, and is appropriate as part of the employer's overall obligation to provide a safe and healthful work place. The provisions of MRP benefits during the employee's removal period may, however, be conditioned upon participation in medical surveillance.

(J) On rare occasions, an employee's blood lead level may not acceptably decline within eighteen months of removal. This situation will arise only in unusual circumstances, thus the standard relies on an individual medical examination to determine how to protect such an employee. This medical determination is to be based on both laboratory values, including lead levels, zinc protoporphyrin levels, blood counts, and other tests felt to be warranted, as well as the physician's judgment that any symptoms or findings on physical examination are a result of lead toxicity. The medical determination may be that the employee is incapable of ever safely returning to his or her former job status. The medical determination may provide additional removal time past eighteen months for some employees or specify special protective measures to be implemented.

(K) The lead standard provides for a multiple physician review in cases where the employee wishes a second opinion concerning potential lead poisoning or toxicity. If an employee wishes a second opinion, he or she can make an appointment with a physician of his or her choice. This second physician will review the findings, recommendations or determinations of the first physician and conduct any examinations, consultations or tests deemed necessary in an attempt to make a final medical determination. If the first and second physicians do not agree in their assessment they must try to resolve their differences. If they cannot reach an agreement then they must designate a third physician to resolve the dispute.

(L) The employer must provide examining and consulting physicians with the following specific information: A copy of the lead regulations and all appendices, a description of the employee's duties as related to exposure, the exposure level to lead and any other toxic substances (if applicable), a description of personal protective equipment used, blood lead levels, and all prior written medical opinions regarding the employee in the employer's possession or control. The employer must also obtain from the physician and provide the employee with a written medical opinion containing blood lead levels, the physician's opinion as to whether the employee is at risk of material impairment to health, any recommended protective measures for the employee if further exposure is permitted, as well as any recommended limitations upon an employee's use of respirators.

(M) Employers must instruct each physician not to reveal to the employer in writing or in any other way his or her findings, laboratory results, or diagnoses which are felt to be unrelated to occupational lead exposure. They must also

instruct each physician to advise the employee of any occupationally or nonoccupationally related medical condition requiring further treatment or evaluation.

(N) The standard provides for the use of respirators when engineering and other primary controls have not been fully implemented. However, the use of respirator protection shall not be used in lieu of temporary medical removal due to elevated blood lead levels or findings that an employee is at risk of material health impairment. This is based on the numerous inadequacies of respirators including skin rash where the facepiece makes contact with the skin, unacceptable stress to breathing in some workers with underlying cardiopulmonary impairment, difficulty in providing adequate fit, the tendency for respirators to create additional hazards by interfering with vision, hearing, and mobility, and the difficulties of assuring the maximum effectiveness of a complicated work practice program involving respirators. Respirators do, however, serve a useful function where engineering and work practice are inadequate by providing interim or short-term protection, provided they are properly selected for the environment in which the employee will be working, properly fitted to the employee, maintained and cleaned periodically, and worn by the employee when required.

(O) In its final standard on occupational exposure to inorganic lead, WISHA has prohibited prophylactic chelation. Diagnostic and therapeutic chelation are permitted only under the supervision of a licensed physician with appropriate medical monitoring in an acceptable clinical setting. The decision to initiate chelation therapy must be made on an individual basis and take into account the severity of symptoms felt to be a result of lead toxicity along with blood lead levels, ZPP levels and other laboratory tests as appropriate. EDTA and penicillamine, which are the primary chelating agents used in the therapy of occupational lead poisoning, have significant potential side effects and their use must be justified on the basis of expected benefits to the worker.

(P) Unless frank and severe symptoms are present, therapeutic chelation is not recommended given the opportunity to remove a worker from exposure and allow the body to naturally excrete accumulated lead. As a diagnostic aid, the chelation mobilization test using CA-EDTA has limited applicability. According to some investigators, the tests can differentiate between lead-induced and other nephropathies. The test may also provide an estimation of the mobile fraction of the total body lead burden.

(Q) Employers are required to assure that accurate records are maintained on exposure monitoring, medical surveillance, and medical removal for each employee. Exposure monitoring and medical surveillance records must be kept for forty years or the duration of employment plus twenty years, whichever is longer, while medical removal records must be maintained for the duration of employment. All records required under the standard must be made available upon request to representatives of the director of the department of labor and industries. Employers must also make environmental and biological monitoring and medical removal records available to affected employees and to former employees or their authorized employee representatives. Employees or their specifically designated representatives have access to their entire medical surveillance records.

(R) In addition, the standard requires that the employer inform all workers exposed to lead at or above the action level of the provisions of the standard and all its appendices, the purpose and description of medical surveillance and provisions for medical removal protection if temporary removal is required. An understanding of the potential health effects of lead exposure by all exposed employees along with full understanding of their rights under the lead standard is essential for an effective monitoring program.

(iii) Adverse health effects of inorganic lead.

(A) Although the toxicity of lead has been known for 2,000 years, the knowledge of the complex relationship between lead exposure and human response is still being refined. Significant research into the toxic properties of lead continues throughout the world, and it should be anticipated that our understanding of thresholds of effects and margins of safety will be improved in future years. The provisions of the lead standard are founded on two prime medical judgments; first, the prevention of adverse health effects from exposure to lead throughout a working lifetime requires that worker blood lead levels be maintained at or below 40 $\mu\text{g}/100\text{g}$, and second, the blood lead levels of workers, male or female, who intend to parent in the near future should be maintained below 30 $\mu\text{g}/100\text{g}$ to minimize adverse reproduction health effects to the parent and developing fetus. The adverse effects of lead on reproduction are being actively researched and WISHA encourages the physician to remain abreast of recent developments in the area to best advise pregnant workers or workers planning to conceive children.

(B) The spectrum of health effects caused by lead exposure can be sub-divided into five developmental states; normal, physiological changes of uncertain significance, pathophysiological changes, overt symptoms (morbidity), and mortality. Within this process there are no sharp distinctions, but rather a continuum of effects. Boundaries between categories overlap due to the wide variation of individual responses and exposures in the working population. WISHA's development of the lead standard focused on pathophysiological changes as well as later stages of disease.

(I) Heme synthesis inhibition.

a) The earliest demonstrated effect of lead involves its ability to inhibit at least two enzymes of the heme synthesis pathway at very low blood levels. Inhibition of delta aminolevulinic acid dehydrase (ALA-D) which catalyzes the conversion of delta-aminolevulinic acid (ALA) to protoporphyrin is observed at a blood lead level below 20 $\mu\text{g}/100\text{g}$ whole blood. At a blood lead level of 40 $\mu\text{g}/100\text{g}$, more than twenty percent of the population would have seventy percent inhibition of ALA-D. There is an exponential increase in ALA excretion at blood lead levels greater than 40 $\mu\text{g}/100\text{g}$.

b) Another enzyme, ferrochelatase, is also inhibited at low blood lead levels. Inhibition of ferrochelatase leads to increased free erythrocyte protoporphyrin (FEP) in the blood which can then bind to zinc to yield zinc protoporphyrin. At a blood lead level of 50 $\mu\text{g}/100\text{g}$ or greater, nearly 100 percent of the population will have an increase FEP. There is also an exponential relationship between blood lead levels greater than 40 $\mu\text{g}/100\text{g}$ and the associated ZPP level, which has led

to the development of the ZPP screening test for lead exposure.

c) While the significance of these effects is subject to debate, it is WISHA's position that these enzyme disturbances are early stages of a disease process which may eventually result in the clinical symptoms of lead poisoning. Whether or not the effects do progress to the later stages of clinical disease, disruption of these enzyme processes over a working lifetime is considered to be a material impairment of health.

d) One of the eventual results of lead-induced inhibition of enzymes in the heme synthesis pathway is anemia which can be asymptomatic if mild but associated with a wide array of symptoms including dizziness, fatigue, and tachycardia when more severe. Studies have indicated that lead levels as low as 50 $\mu\text{g}/100\text{g}$ can be associated with a definite decreased hemoglobin, although most cases of lead-induced anemia, as well as shortened red-cell survival times, occur at lead levels exceeding 80 $\mu\text{g}/100\text{g}$. Inhibited hemoglobin synthesis is more common in chronic cases whereas shortened erythrocyte life span is more common in acute cases.

e) In lead-induced anemias, there is usually a reticulocytosis along with the presence of basophilic stippling, and ringed sideroblasts, although none of the above are pathognomonic for lead-induced anemia.

(II) Neurological effects.

a) Inorganic lead had been found to have toxic effects on both the central and peripheral nervous systems. The earliest stage of lead-induced central nervous system effects first manifest themselves in the form of behavioral disturbances and central nervous system symptoms including irritability, restlessness, insomnia and other sleep disturbances, fatigue, vertigo, headache, poor memory, tremor, depression, and apathy. With more severe exposure, symptoms can progress to drowsiness, stupor, hallucinations, delirium, convulsions and coma.

b) The most severe and acute form of lead poisoning which usually follows ingestion or inhalation of large amounts of lead is acute encephalopathy which may arise precipitously with the onset of intractable seizures, coma, cardiorespiratory arrest, and death within 48 hours.

c) While there is disagreement about what exposure levels are needed to produce the earliest symptoms, most experts agree that symptoms definitely can occur at blood lead levels of 60 $\mu\text{g}/100\text{g}$ whole blood and therefore recommend a 40 $\mu\text{g}/100\text{g}$ maximum. The central nervous system effects frequently are not reversible following discontinued exposure or chelation therapy and when improvement does occur, it is almost always only partial.

d) The peripheral neuropathy resulting from lead exposure characteristically involves only motor function with minimal sensory damage and has a marked predilection for the extensor muscles of the most active extremity. The peripheral neuropathy can occur with varying degrees of severity. The earliest and mildest form which can be detected in workers with blood lead levels as low as 50 $\mu\text{g}/100\text{g}$ is manifested by slowing or motor nerve conduction velocity often without clinical symptoms. With progression of the neuropathy there is development of painless extensor muscle weakness usually involving the extensor muscles of the fin-

gers and hand in the most active upper extremity, followed in severe cases by wrist drop, much less commonly, foot drop.

e) In addition to slowing of nerve conduction, electromyographical studies in patients with blood lead levels greater than 50 $\mu\text{g}/100\text{g}$ have demonstrated a decrease in the number of acting motor unit potentials, an increase in the duration of motor unit potentials, and spontaneous pathological activity including fibrillations and fasciculation. Whether these effects occur at levels of 40 $\mu\text{g}/100\text{g}$ is undetermined.

f) While the peripheral neuropathies can occasionally be reversed with therapy, again such recovery is not assured particularly in the more severe neuropathies and often improvement is only partial. The lack of reversibility is felt to be due in part to segmental demyelination.

(III) Gastrointestinal. Lead may also effect the gastrointestinal system producing abdominal colic or diffuse abdominal pain, constipation, obstipation, diarrhea, anorexia, nausea and vomiting. Lead colic rarely develops at blood lead levels below 80 $\mu\text{g}/100\text{g}$.

(IV) Renal.

a) Renal toxicity represents one of the most serious health effects of lead poisoning. In the early stages of disease nuclear inclusion bodies can frequently be identified in proximal renal tubular cells. Renal functions remain normal and the changes in this stage are probably reversible. With more advanced disease there is progressive interstitial fibrosis and impaired renal function. Eventually extensive interstitial fibrosis ensues with sclerotic glomeruli and dilated and atrophied proximal tubules; all represent end stage kidney disease. Azotemia can be progressive, eventually resulting in frank uremia necessitating dialysis. There is occasionally associated hypertension and hyperuricemia with or without gout.

b) Early kidney disease is difficult to detect. The urinalysis is normal in early lead nephropathy and the blood urea nitrogen and serum creatinine increase only when two-thirds of kidney function is lost. Measurement of creatinine clearance can often detect earlier disease as can other methods of measurement of glomerular filtration rate. An abnormal Ca-EDTA mobilization test has been used to differentiate between lead-induced and other nephropathies, but this procedure is not widely accepted. A form of Fanconi syndrome with aminoaciduria, glycosuria, and hyperphosphaturia indicating severe injury to the proximal renal tubules is occasionally seen in children.

(V) Reproductive effects.

a) Exposure to lead can have serious effects on reproductive function in both males and females. In male workers exposed to lead there can be a decrease in sexual drive, impotence, decreased ability to produce healthy sperm, and sterility. Malformed sperm (teratospermia), decreased number of sperm (hypospermia), and sperm with decreased motility (asthenospermia) can occur. Teratospermia has been noted at mean blood lead levels of 53 $\mu\text{g}/100\text{g}$ and hypospermia and asthenospermia at 41 $\mu\text{g}/100\text{g}$. Furthermore, there appears to be a dose-response relationship for teratospermia in lead exposed workers.

b) Women exposed to lead may experience menstrual disturbances including dysmenorrhea, menorrhagia and amenorrhea. Following exposure to lead, women have a

higher frequency of sterility, premature births, spontaneous miscarriages, and stillbirths.

c) Germ cells can be affected by lead and cause genetic damage in the egg or sperm cells before conception and result in failure to implant, miscarriage, stillbirth, or birth defects.

d) Infants of mothers with lead poisoning have a higher mortality during the first year and suffer from lowered birth weights, slower growth, and nervous system disorders.

e) Lead can pass through the placental barrier and lead levels in the mother's blood are comparable to concentrations of lead in the umbilical cord at birth. Transplacental passage becomes detectable at 12-14 weeks of gestation and increases until birth.

f) There is little direct data on damage to the fetus from exposure to lead but it is generally assumed that the fetus and newborn would be at least as susceptible to neurological damage as young children. Blood lead levels of 50-60 µg/100g in children can cause significant neurobehavioral impairments, and there is evidence of hyperactivity at blood levels as low as 25 µg/100g. Given the overall body of literature concerning the adverse health effects of lead in children, WISHA feels that the blood lead level in children should be maintained below 30 µg/100g with a population mean of 15 µg/100g. Blood lead levels in the fetus and newborn likewise should not exceed 30 µg/100g.

g) Because of lead's ability to pass through the placental barrier and also because of the demonstrated adverse effects of lead on reproductive function in both males and females as well as the risk of genetic damage of lead on both the ovum and sperm, WISHA recommends a 30 µg/100g maximum permissible blood lead level in both males and females who wish to bear children.

(IV) Other toxic effects.

a) Debate and research continue on the effects of lead on the human body. Hypertension has frequently been noted in occupationally exposed individuals although it is difficult to assess whether this is due to lead's adverse effects on the kidneys or if some other mechanism is involved.

b) Vascular and electrocardiographic changes have been detected but have not been well characterized. Lead is thought to impair thyroid function and interfere with the pituitary-adrenal axis, but again these effects have not been well defined.

(iv) Medical evaluation.

(A) The most important principle in evaluating a worker for any occupational disease including lead poisoning is a high index of suspicion on the part of the examining physician. As discussed in Section (ii), lead can affect numerous organ systems and produce a wide array of signs and symptoms, most of which are nonspecific and subtle in nature at least in the early stages of disease. Unless serious concern for lead toxicity is present, many of the early clues to diagnosis may easily be overlooked.

(B) The crucial initial step in the medical evaluation is recognizing that a worker's employment can result in exposure to lead. The worker will frequently be able to define exposures to lead and lead-containing materials but often will not volunteer this information unless specifically asked. In other situations the worker may not know of any exposures to

lead but the suspicion might be raised on the part of the physician because of the industry or occupation of the worker. Potential occupational exposure to lead and its compounds occur in at least 120 occupations, including lead smelting, the manufacture of lead storage batteries, the manufacture of lead pigments and products containing pigments, solder manufacture, shipbuilding and ship repair, auto manufacturing, construction, and painting.

(C) Once the possibility for lead exposure is raised, the focus can then be directed toward eliciting information from the medical history, physical exam, and finally from laboratory data to evaluate the worker for potential lead toxicity.

(D) A complete and detailed work history is important in the initial evaluation. A listing of all previous employment with information on work processes, exposure to fumes or dust, known exposures to lead or other toxic substances, respiratory protection used, and previous medical surveillance should all be included in the worker's record. Where exposure to lead is suspected, information concerning on-the-job personal hygiene, smoking or eating habits in work areas, laundry procedures, and use of any protective clothing or respiratory protection equipment should be noted. A complete work history is essential in the medical evaluation of a worker with suspected lead toxicity, especially when long-term effects such as neurotoxicity and nephrotoxicity are considered.

(E) The medical history is also of fundamental importance and should include a listing of all past and current medical conditions, current medications including proprietary drug intake, previous surgeries and hospitalizations, allergies, smoking history, alcohol consumption, and also nonoccupational lead exposures such as hobbies (hunting, riflery). Also known childhood exposures should be elicited. Any previous history of hematological, neurological, gastrointestinal, renal, psychological, gynecological, genetic, or reproductive problems should be specifically noted.

(F) A careful and complete review of systems must be performed to assess both recognized complaints and subtle or slowly acquired symptoms which the worker might not appreciate as being significant. The review of symptoms should include the following:

General	- weight loss, fatigue, decreased appetite.
Head, Eyes, Ears, Nose, Throat (HEENT)	- headaches, visual disturbance or decreased visual acuity, hearing deficits or tinnitus, pigmentation of the oral mucosa, or metallic taste in mouth.
Cardiopulmonary	- shortness of breath, cough, chest pains, palpitations, or orthopnea.
Gastrointestinal	- nausea, vomiting, heartburn, abdominal pain, constipation or diarrhea.

- Neurologic - irritability, insomnia, weakness (fatigue), dizziness, loss of memory, confusion, hallucinations, incoordination, ataxia, decreased strength in hands or feet, disturbance in gait, difficulty in climbing stairs, or seizures.
- Hematologic - pallor, easy fatigability, abnormal blood loss, melena.
- Reproductive (male or female and spouse where relevant) - history of infertility, impotence, loss of libido, abnormal menstrual periods, history of miscarriages, stillbirths, or children with birth defects.
- Musculoskeletal - muscle and joint pains.

(G) The physical examination should emphasize the neurological, gastrointestinal, and cardiovascular systems. The worker's weight and blood pressure should be recorded and the oral mucosa checked for pigmentation characteristic of a possible Burtonian or lead line on the gingiva. It should be noted, however, that the lead line may not be present even in severe lead poisoning if good oral hygiene is practiced.

(H) The presence of pallor on skin examination may indicate an anemia, which if severe might also be associated with a tachycardia. If an anemia is suspected, an active search for blood loss should be undertaken including potential blood loss through the gastrointestinal tract.

(I) A complete neurological examination should include an adequate mental status evaluation including a search for behavioral and psychological disturbances, memory testing, evaluation for irritability, insomnia, hallucinations, and mental clouding. Gait and coordination should be examined along with close observation for tremor. A detailed evaluation of peripheral nerve function including careful sensory and motor function testing is warranted. Strength testing particularly of extensor muscle groups of all extremities is of fundamental importance.

(J) Cranial nerve evaluation should also be included in the routine examination.

(K) The abdominal examination should include auscultation for bowel sounds and abnormal bruits and palpation for organomegaly, masses, and diffuse abdominal tenderness.

(L) Cardiovascular examination should evaluate possible early signs of congestive heart failure. Pulmonary status should be addressed particularly if respirator protection is contemplated.

(M) As part of the medical evaluation, the lead standard requires the following laboratory studies.

(I) Blood lead level.

(II) Hemoglobin and hematocrit determinations, red cell indices, and examination of the peripheral blood smear to evaluate red blood cell morphology.

(III) Blood urea nitrogen.

(IV) Serum creatinine.

(V) Routine urinalysis with microscopic examination.

(VI) A zinc protoporphyrin level.

(N) In addition to the above, the physician is authorized to order any further laboratory or other tests which he or she deems necessary in accordance with sound medical practice. The evaluation must also include pregnancy testing or laboratory evaluation of male fertility if requested by the employee.

(O) Additional tests which are probably not warranted on a routine basis but may be appropriate when blood lead and ZPP levels are equivocal include delta aminolevulinic acid and coproporphyrin concentrations in the urine, and dark-field illumination for detection of basophilic stippling in red blood cells.

(P) If an anemia is detected further studies including a careful examination of the peripheral smear, reticulocyte count, stool for occult blood, serum iron, total iron binding capacity, bilirubin, and, if appropriate vitamin B12 and folate may be of value in attempting to identify the cause of the anemia.

(Q) If a peripheral neuropathy is suspected, nerve conduction studies are warranted both for diagnosis and as a basis to monitor any therapy.

(R) If renal disease is questioned, a 24-hour urine collection for creatinine clearance, protein, and electrolytes may be indicated. Elevated uric acid levels may result from lead-induced renal disease and a serum uric acid level might be performed.

(S) An electrocardiogram and chest x-ray may be obtained as deemed appropriate.

(T) Sophisticated and highly specialized testing should not be done routinely and where indicated should be under the direction of a specialist.

(v) Laboratory evaluation.

(A) The blood level at present remains the single most important test to monitor lead exposure and is the test used in the medical surveillance program under the lead standard to guide employee medical removal. The ZPP has several advantages over the blood lead level. Because of its relatively recent development and the lack of extensive data concerning its interpretation, the ZPP currently remains an ancillary test.

(B) This section will discuss the blood lead level and ZPP in detail and will outline their relative advantages and disadvantages. Other blood tests currently available to evaluate lead exposure will also be reviewed.

(C) The blood lead level is a good index of current or recent lead absorption when there is no anemia present and when the worker has not taken any chelating agents. However, blood lead levels along with urinary lead levels do not necessarily indicate the total body burden of lead and are not adequate measures of past exposure. One reason for this is that lead has a high affinity for bone and up to 90 percent of the body's total lead is deposited there. A very important component of the total lead body burden is lead in soft tissue (liver, kidneys, and brain). This fraction of the lead body burden, the biologically active lead, is not entirely reflected by blood lead levels since it is a function of the dynamics of lead absorption, distribution, deposition in bone and excretion. Following discontinuation of exposure to lead, the excess body burden is only slowly mobilized from bone and other relatively stable stores and excreted. Consequently, a high blood lead level may only represent recent heavy exposure to lead without a significant total body excess and likewise a

low blood lead level does not exclude an elevated total body burden of lead.

(D) Also due to its correlation with recent exposures, the blood lead level may vary considerably over short time intervals.

(E) To minimize laboratory error and erroneous results due to contamination, blood specimens must be carefully collected after thorough cleaning of the skin with appropriate methods using lead-free containers and analyzed by a reliable laboratory. Under the standard, samples must be analyzed in laboratories which are approved by the Center for Disease Control (CDC) or which have received satisfactory grades in proficiency testing by the CDC in the previous year. Analysis is to be made using atomic absorption spectrophotometry anodic stripping; voltammetry or any method which meets the accuracy requirements set forth by the standard.

(F) The determination of lead in urine is generally considered a less reliable monitoring technique than analysis of whole blood primarily due to individual variability in urinary excretion capacity as well as the technical difficulty of obtaining accurate 24 hour urine collections. In addition, workers with renal insufficiency, whether due to lead or some other cause, may have decreased lead clearance and consequently urine lead levels may underestimate the true lead burden. Therefore, urine lead levels should not be used as a routine test.

(G) The zinc protoporphyrin test, unlike the blood lead determination, measures an adverse metabolic effect of lead and as such is a better indicator of lead toxicity than the level of blood lead itself. The level of ZPP reflects lead absorption over the preceding three to four months, and therefore is a better indicator of lead body burden. The ZPP requires more time than the blood lead to read significantly elevated levels; the return to normal after discontinuing lead exposure is also slower. Furthermore, the ZPP test is simpler, faster, and less expensive to perform and no contamination is possible. Many investigators believe it is the most reliable means of monitoring chronic lead absorption.

(H) Zinc protoporphyrin results from the inhibition of the enzyme ferrochelatase which catalyzes the insertion of an iron molecule into the protoporphyrin molecule, which then becomes heme. If iron is not inserted into the molecule then zinc, having a greater affinity for protoporphyrin, takes place in the iron, forming ZPP.

(I) An elevation in the level of circulating ZPP may occur at blood lead levels as low as 20-30 $\mu\text{g}/100\text{g}$ in some workers. Once the blood lead level has reached 40 $\mu\text{g}/100\text{g}$ there is more marked rise in the ZPP value from its normal range of less than 100 $\mu\text{g}/100\text{ml}$. Increases in blood lead levels beyond 40 $\mu\text{g}/100\text{g}$ are associated with exponential increases in ZPP.

(J) Whereas blood lead levels fluctuate over short time spans, ZPP levels remain relatively stable. ZPP is measured directly in red blood cells and is present for the cell's entire 120 day lifespan. Therefore, the ZPP level in blood reflects the average ZPP production over the previous three to four months and consequently the average lead exposure during that time interval.

(K) It is recommended that a hematocrit be determined whenever a confirmed ZPP of 50 $\mu\text{g}/100\text{ml}$ whole blood is

obtained to rule out a significant underlying anemia. If the ZPP is in excess of 100 $\mu\text{g}/100\text{ml}$ and not associated with abnormal elevations in blood lead levels, the laboratory should be checked to be sure the blood leads were determined using atomic absorption spectrophotometry, anodic stripping voltammetry or any method which meets the accuracy requirements set forth by the standard, by a CDC approved laboratory which is experienced in lead level determinations. Repeat periodic blood lead studies should be obtained in all individuals with elevated ZPP levels to be certain that an associated elevated blood lead level has not been missed due to transient fluctuations in blood leads.

(L) ZPP has characteristic fluorescence spectrum with a peak at 594nm which is detectable with a hematofluorimeter. The hematofluorimeter is accurate and portable and can provide on-site, instantaneous results for workers who can be frequently tested via a finger prick.

(M) However, careful attention must be given to calibration and quality control procedures. Limited data on blood lead - ZPP correlations and the ZPP levels which are associated with the adverse health effects discussed in item (ii) are the major limitations of the test. Also it is difficult to correlate ZPP levels with environmental exposure and there is some variation of response with age and sex. Nevertheless, the ZPP promises to be an important diagnostic test for the early detection of lead toxicity and its value will increase as more data is collected regarding its relationship to other manifestations of lead poisoning.

(N) Levels of delta-aminolevulinic acid (ALA) in the urine are also used as a measure of lead exposure. Increasing concentrations of ALA are believed to result from the inhibition of the enzyme delta-aminolevulinic acid dehydrase (ALA-D). Although the test is relatively easy to perform, inexpensive, and rapid, the disadvantages include variability in results, the necessity to collect a complete 24 hour urine sample which has a specific gravity greater than 1.010, and also the fact that ALA decomposes in the presence of light.

(O) The pattern of porphyrin excretion in the urine can also be helpful in identifying lead intoxication. With lead poisoning, the urine concentrations of coproporphyrins I and II, porphobilinogen and uroporphyrin I rise. The most important increase, however, is that of coproporphyrin III; levels may exceed 5,000 $\mu\text{g}/1$ in the urine in lead poisoned individuals, but its correlation with blood lead levels and ZPP are not as good as those of ALA. Increases in urinary porphyrins are not diagnostic of lead toxicity and may be seen in porphyria, some liver diseases, and in patients with high reticulocyte counts.

(vi) Summary.

(A) The WISHA standard for inorganic lead places significant emphasis on the medical surveillance of all workers exposed to levels of inorganic lead above the action level of 30 $\mu\text{g}/\text{m}^3$ TWA. The physician has a fundamental role in this surveillance program, and in the operation of the medical removal protection program.

(B) Even with adequate worker education on the adverse health effects of lead and appropriate training in work practices, personal hygiene and other control measures, the physician has a primary responsibility for evaluating potential lead toxicity in the worker. It is only through a careful and detailed

medical and work history, a complete physical examination and appropriate laboratory testing that an accurate assessment can be made. Many of the adverse health effects of lead toxicity are either irreversible or only partially reversible and therefore early detection of disease is very important.

(C) This document outlines the medical monitoring program as defined by the occupational safety and health standard for inorganic lead. It reviews the adverse health effects of lead poisoning and describes the important elements of the history and physical examinations as they relate to these adverse effects.

(D) It is hoped that this review and discussion will give the physician a better understanding of the WISHA standard with the ultimate goal of protecting the health and well-being of the worker exposed to lead under his or her care.

(d) Appendix D. Recommendations to employers concerning high-risk tasks (nonmandatory).

The department advises employers that the following tasks have a high risk for lead overexposure (this list is not complete; other tasks also can result in lead over-exposure):

- Any open flame operation involving lead-containing solder in a manner producing molten solder, including the manufacture or repair of motor vehicle radiators;
- Sanding, cutting or grinding of lead-containing solder;
- Breaking, recycling or manufacture of lead-containing batteries;
- Casting objects using lead, brass, or lead-containing alloys;
- Where lead-containing coatings or paints are present:
 - abrasive blasting
 - welding
 - cutting
 - torch burning
 - manual demolition of structures
 - manual scraping
 - manual sanding
 - heat gun applications
 - power tool cleaning
 - rivet busting
 - clean-up activities where dry expendable abrasives are used
 - abrasive blasting enclosure movement and removal;
- Spray-painting with lead-containing paint;
- Using lead-containing mortar;
- Lead burning;
- Operation or cleaning of shooting facilities where lead bullets are used;
- Formulation or processing of lead-containing pigments or paints;
- Cutting, burning, or melting of lead-containing materials.

The department recommends that annual blood lead testing be offered to all employees potentially overexposed to lead, including those performing the tasks listed above, regardless of air lead levels. Research has shown that air lead levels often do not accurately predict workers' lead overexposure. The blood lead testing will provide the most information if performed during a period of peak lead exposure.

Employers should be aware that the United States Public Health Service has set a goal of eliminating occupational exposures which result in whole blood lead levels of 25 µg/dl

or greater. This goal should guide whether employees' blood lead levels indicate lead overexposure.

If blood lead levels are elevated in an employee performing a task associated with lead overexposure, employers should assess the maintenance and effectiveness of exposure controls, hygiene facilities, respiratory protection program, the employee's work practices and personal hygiene, and the employee's respirator use, if any. If a deficiency exists in any of these areas, the employer should correct the problem.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07521, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07521, filed 4/10/96, effective 6/1/96; 95-04-078, § 296-62-07521, filed 1/30/95, effective 3/2/95; 91-24-017 (Order 91-07), § 296-62-07521, filed 11/22/91, effective 12/24/91; 90-17-051 (Order 90-10), § 296-62-07521, filed 8/13/90, effective 9/24/90; 90-03-029 (Order 89-20), § 296-62-07521, filed 1/11/90, effective 2/26/90; 88-14-108 (Order 88-11), § 296-62-07521, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-07521, filed 11/30/83; 82-13-045 (Order 82-22), § 296-62-07521, filed 6/11/82. Formerly WAC 296-62-07349.]

WAC 296-62-07523 Benzene. (1) Scope and application.

(a) This section applies to all occupational exposures to benzene. Chemical Abstracts Service Registry No. 71-43-2, except as provided in (b) and (c) of this subsection.

(b) This section does not apply to:

(i) The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities, except that operations where gasoline or motor fuels are dispensed for more than four hours per day in an indoor location are covered by this section.

(ii) Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, except for the provisions of WAC 296-62-054 as incorporated into this section and the emergency provisions of subsections (7) and (9)(d) of this section.

(iii) The storage, transportation, distribution, or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid, except for the provisions of WAC 296-62-054 as incorporated into this section and the emergency provisions of subsections (7) and (9)(d) of this section.

(iv) Containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene.

(v) Work operations where the only exposure to benzene is from liquid mixtures containing 0.5 percent or less of benzene by volume, or the vapors released from such liquids until September 12, 1988; work operations where the only exposure to benzene is from liquid mixtures containing 0.3 percent or less of benzene by volume or the vapors released from such liquids from September 12, 1988, to September 12, 1989; and work operations where the only exposure to benzene is from liquid mixtures containing 0.1 percent or less of benzene by volume or the vapors released from such liquids after September 12, 1989; except that tire building machine operators using solvents with more than 0.1 percent benzene are covered by subsection (9) of this section.

(vi) Oil and gas drilling, production, and servicing operations.

(vii) Coke oven batteries.

(c) The cleaning and repair of barges and tankers which have contained benzene are excluded from subsection (6) of this section (Methods of compliance), subsection (5)(a) of this section (General), and subsection (5)(f) of this section (Accuracy of monitoring). Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible.

(2) Definitions.

(a) "Action level" means an airborne concentration of benzene of 0.5 ppm calculated as an 8-hour time-weighted average.

(b) "Authorized person" means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under subsection (5) of this section, or any other person authorized by the Washington Industrial Safety and Health Act (WISHA) or regulations issued under WISHA.

(c) "Benzene" (C₆H₆) (CAS Registry No. 71-43-2) means liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials.

(d) "Bulk wholesale storage facility" means a bulk terminal or bulk plant where fuel is stored prior to its delivery to wholesale customers.

(e) "Container" means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, or the like, but does not include piping systems.

(f) "Day" means any part of a calendar day.

(g) "Director" means the director of the department of labor and industries, or his/her designated representative.

(h) "Emergency" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which may or does result in an unexpected significant release of benzene.

(i) "Employee exposure" means exposure to airborne benzene which would occur if the employee were not using respiratory protective equipment.

(j) "Regulated area" means any area where airborne concentrations of benzene exceed or can reasonably be expected to exceed, the permissible exposure limits, either the 8-hour time-weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for fifteen minutes.

(k) "Vapor control system" means any equipment used for containing the total vapors displaced during the loading of gasoline, motor fuel, or other fuel tank trucks and the displacing of these vapors through a vapor processing system or balancing the vapor with the storage tank. This equipment also includes systems containing the vapors displaced from the storage tank during the unloading of the tank truck which balance the vapors back to the tank truck.

(3) Permissible exposure limits (PELs).

(a) Time-weighted average limit (TWA). The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of one part of benzene per

million parts of air (1 ppm) as an 8-hour time-weighted average.

(b) Short-term exposure limit (STEL). The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of 5 ppm as averaged over any fifteen minute period.

(4) Regulated areas.

(a) The employer shall establish a regulated area whenever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour time-weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for fifteen minutes.

(b) Access to regulated areas shall be limited to authorized persons.

(c) Regulated areas shall be determined from the rest of the workplace in any manner that minimizes the number of employees exposed to benzene within the regulated area.

(5) Exposure monitoring.

(a) General.

(i) Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene.

(ii) Representative 8-hour TWA employee exposures shall be determined on the basis of one sample or samples representing the full shift exposure for each job classification in each work area.

(iii) Determinations of compliance with the STEL shall be made from fifteen minute employee breathing zone samples measured at operations where there is reason to believe exposures are high, such as where tanks are opened, filled, unloaded, or gauged; where containers or process equipment are opened and where benzene is used for cleaning or as a solvent in an uncontrolled situation. The employer may use objective data, such as measurements from brief period measuring devices, to determine where STEL monitoring is needed.

(iv) Except for initial monitoring as required under (b) of this subsection, where the employer can document that one shift will consistently have higher employee exposures for an operation, the employer shall only be required to determine representative employee exposure for that operation during the shift on which the highest exposure is expected.

(b) Initial monitoring.

(i) Each employer who has a place of employment covered under subsection (1)(a) of this section shall monitor each of these workplaces and work operations to determine accurately the airborne concentrations of benzene to which employees may be exposed.

(ii) The initial monitoring required under (b)(i) of this subsection shall be completed by sixty days after the effective date of this standard or within thirty days of the introduction of benzene into the workplace. Where the employer has monitored within one year prior to the effective date of this standard and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of (b)(i) of this subsection.

(c) Periodic monitoring and monitoring frequency.

(i) If the monitoring required by (b)(i) of this subsection reveals employee exposure at or above the action level but at or below the TWA, the employer shall repeat such monitoring for each such employee at least every year.

(ii) If the monitoring required by (b)(i) of this subsection reveals employee exposure above the TWA, the employer shall repeat such monitoring for each such employee at least every six months.

(iii) The employer may alter the monitoring schedule from every six months to annually for any employee for whom two consecutive measurements taken at least seven days apart indicate that the employee exposure has decreased to the TWA or below, but is at or above the action level.

(iv) Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short term exposures.

(d) Termination of monitoring.

(i) If the initial monitoring required by (b)(i) of this subsection reveals employee exposure to be below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by (e) of this subsection.

(ii) If the periodic monitoring required by (c) of this subsection reveals that employee exposures, as indicated by at least two consecutive measurements taken at least seven days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by (e) of this subsection.

(e) Additional monitoring.

(i) The employer shall institute the exposure monitoring required under (b) and (c) of this subsection when there has been a change in the production, process, control equipment, personnel, or work practices which may result in new or additional exposures to benzene, or when the employer has any reason to suspect a change which may result in new or additional exposures.

(ii) Whenever spills, leaks, ruptures, or other breakdowns occur that may lead to employee exposure, the employer shall monitor (using area or personal sampling) after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.

(f) Accuracy of monitoring. Monitoring shall be accurate, to a confidence level of ninety-five percent, to within plus or minus twenty-five percent for airborne concentrations of benzene.

(g) Employee notification of monitoring results.

(i) The employer shall, within fifteen working days after the receipt of the results of any monitoring performed under this standard, notify each employee of these results in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(ii) Whenever the PELs are exceeded, the written notification required by (g)(i) of this subsection shall contain the corrective action being taken by the employer to reduce the employee exposure to or below the PEL, or shall refer to a document available to the employee which states the corrective actions to be taken.

(6) Methods of compliance.

(a) Engineering controls and work practices.

(i) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to benzene at or below the permissible exposure limits, except to the extent that the employer can establish that these controls are not feasible or where the provisions of (a)(iii) of this subsection or subsection (7)(a) of this section apply.

(ii) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the PELs, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of subsection (7) of this section.

(iii) Where the employer can document that benzene is used in a workplace less than a total of thirty days per year, the employer shall use engineering controls, work practice controls or respiratory protection or any combination of these controls to reduce employee exposure to benzene to or below the PELs, except that employers shall use engineering and work practice controls, if feasible, to reduce exposure to or below 10 ppm as an 8-hour TWA.

(b) Compliance program.

(i) When any exposures are over the PEL, the employer shall establish and implement a written program to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls, as required by (a) of this subsection.

(ii) The written program shall include a schedule for development and implementation of the engineering and work practice controls. These plans shall be reviewed and revised as appropriate based on the most recent exposure monitoring data, to reflect the current status of the program.

(iii) Written compliance programs shall be furnished upon request for examination and copying to the director, affected employees, and designated employee representatives.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Work operations for which the employer establishes that compliance with either the TWA or STEL through the use of engineering and work-practice controls is not feasible; for example some maintenance and repair activities, vessel cleaning, or other operations where engineering and work-practice controls are infeasible because exposures are intermittent and limited in duration;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient, or are not required under subsection (6)(a)(iii) of this section, to reduce exposure to or below the PELs;

(iv) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1), 296-62-07131 (4)(b)(i) and (ii), and 296-62-07150 through 296-62-07156).

(ii) For air-purifying respirators, the employer must replace the air-purifying element at the expiration of its service life or at the beginning of each shift in which such elements are used, whichever comes first.

(iii) If NIOSH certifies an air-purifying element with an end-of-service-life indicator for benzene, such an element may be used until the indicator shows no further useful life.

(c) Respirator selection.

(i) The employer must select the appropriate respirator from Table 1 of this section.

(ii) Any employee who cannot use a negative-pressure respirator must be allowed to use a respirator with less breathing resistance, such as a powered air-purifying respirator or supplied-air respirator.

TABLE 1. - RESPIRATORY PROTECTION FOR BENZENE

Airborne concentration of benzene or condition of use	Respirator type
(a) Less than or equal to 10 ppm.	(1) Half-mask air-purifying respirator with organic vapor cartridge.
(b) Less than or equal to 50 ppm.	(1) Full facepiece respirator with organic vapor cartridges. (1) Full facepiece gas mask with chin style canister. ¹
(c) Less than or equal to 100 ppm.	(1) Full facepiece powered air-purifying respirator with organic vapor canister. ¹
(d) Less than or equal to 1,000 ppm.	(1) Supplied air respirator with full facepiece in positive-pressure mode.
(e) Greater than 1,000 ppm or unknown concentration.	(1) Self-contained breathing apparatus with full facepiece in positive-pressure mode. (2) Full facepiece positive-pressure supplied-air respirator with auxiliary self-contained air supply.
(f) Escape	(1) Any organic vapor gas mask; or (2) Any self-contained breathing apparatus with full facepiece.
(g) Firefighting	(1) Full facepiece self-contained breathing apparatus in positive pressure mode.

¹Canisters must have a minimum service life of four (4) hours when tested at 150 ppm benzene, at a flow rate of 64 LPM, 25° C, and 85% relative humidity for non-powered air purifying respirators. The flow rate shall be 115 LPM and 170 LPM respectively for tight fitting and loose fitting powered air-purifying respirators.

(8) Protective clothing and equipment. Personal protective clothing and equipment shall be worn where appropriate to prevent eye contact and limit dermal exposure to liquid benzene. Protective clothing and equipment shall be provided by the employer at no cost to the employee and the employer shall assure its use where appropriate. Eye and face protection shall meet the requirements of WAC 296-24-07801.

(9) Medical surveillance.

(a) General.

(i) The employer shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level thirty or more days per

year; for employees who are or may be exposed to benzene at or above the PELs ten or more days per year; for employees who have been exposed to more than 10 ppm of benzene for thirty or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician and that all laboratory tests are conducted by an accredited laboratory.

(iii) The employer shall assure that persons other than licensed physicians who administer the pulmonary function testing required by this section shall complete a training course in spirometry sponsored by an appropriate governmental, academic, or professional institution.

(iv) The employer shall assure that all examinations and procedures are provided without cost to the employee and at a reasonable time and place.

(b) Initial examination.

(i) Within sixty days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by (a)(i) of this subsection with a medical examination including the following elements:

(A) A detailed occupational history which includes:

(I) Past work exposure to benzene or any other hematological toxins;

(II) A family history of blood dyscrasias including hematological neoplasms;

(III) A history of blood dyscrasias including genetic hemoglobin abnormalities, bleeding abnormalities, abnormal function of formed blood elements;

(IV) A history of renal or liver dysfunction;

(V) A history of medicinal drugs routinely taken;

(VI) A history of previous exposure to ionizing radiation; and

(VII) Exposure to marrow toxins outside of the current work situation.

(B) A complete physical examination.

(C) Laboratory tests. A complete blood count including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC). The results of these tests shall be reviewed by the examining physician.

(D) Additional tests as necessary in the opinion of the examining physician, based on alterations to the components of the blood or other signs which may be related to benzene exposure.

(E) For all workers required to wear respirators for at least thirty days a year, the physical examination shall pay special attention to the cardiopulmonary system and shall include a pulmonary function test.

(ii) No initial medical examination is required to satisfy the requirements of (b)(i) of this subsection if adequate records show that the employee has been examined in accordance with the procedures of (b)(i) of this subsection within the twelve months prior to the effective date of this standard.

(c) Periodic examinations.

(i) The employer shall provide each employee covered under (a)(i) of this subsection with a medical examination annually following the previous examination. These periodic examinations shall include at least the following elements:

(A) A brief history regarding any new exposure to potential marrow toxins, changes in medicinal drug use, and the appearance of physical signs relating to blood disorders;

(B) A complete blood count including a leukocyte count with differential, quantitative thrombocyte count, hemoglobin, hematocrit, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC); and

(C) Appropriate additional tests as necessary, in the opinion of the examining physician, in consequence of alterations in the components of the blood or other signs which may be related to benzene exposure.

(ii) Where the employee develops signs and symptoms commonly associated with toxic exposure to benzene, the employer shall provide the employee with an additional medical examination which shall include those elements considered appropriate by the examining physician.

(iii) For persons required to use respirators for at least thirty days a year, a pulmonary function test shall be performed every three years. A specific evaluation of the cardiopulmonary system shall be made at the time of the pulmonary function test.

(d) Emergency examinations.

(i) In addition to the surveillance required by (a)(i) of this subsection, if an employee is exposed to benzene in an emergency situation, the employer shall have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within seventy-two hours. The urine specific gravity shall be corrected to 1.024.

(ii) If the result of the urinary phenol test is below 75 mg phenol/L of urine, no further testing is required.

(iii) If the result of the urinary phenol test is equal to or greater than 75 mg phenol/L of urine, the employer shall provide the employee with a complete blood count including an erythrocyte count, leukocyte count with differential and thrombocyte count at monthly intervals for a duration of three months following the emergency exposure.

(iv) If any of the conditions specified in (e)(i) of this subsection exists, then the further requirements of (e) of this subsection shall be met and the employer shall, in addition, provide the employees with periodic examinations if directed by the physician.

(e) Additional examinations and referrals.

(i) Where the results of the complete blood count required for the initial and periodic examinations indicate any of the following abnormal conditions exist, then the blood count shall be repeated within two weeks.

(A) The hemoglobin level or the hematocrit falls below the normal limit (outside the ninety-five percent confidence interval (C.I.)) as determined by the laboratory for the particular geographic area and/or these indices show a persistent downward trend from the individual's preexposure norms; provided these findings cannot be explained by other medical reasons.

(B) The thrombocyte (platelet) count varies more than twenty percent below the employee's most recent values or

falls outside the normal limit (ninety-five percent C.I.) as determined by the laboratory.

(C) The leukocyte count is below 4,000 per mm³ or there is an abnormal differential count.

(ii) If the abnormality persists, the examining physician shall refer the employee to a hematologist or an internist for further evaluation unless the physician has good reason to believe such referral is unnecessary. (See Appendix C for examples of conditions where a referral may be unnecessary.)

(iii) The employer shall provide the hematologist or internist with the information required to be provided to the physician under this subsection and the medical record required to be maintained by subsection (11)(b)(ii) of this section.

(iv) The hematologist's or internist's evaluation shall include a determination as to the need for additional tests, and the employer shall assure that these tests are provided.

(f) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this regulation and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The employee's actual or representative exposure level;

(iv) A description of any personal protective equipment used or to be used; and

(v) Information from previous employment-related medical examinations of the affected employee which is not otherwise available to the examining physician.

(g) Physician's written opinions.

(i) For each examination under this section, the employer shall obtain and provide the employee with a copy of the examining physician's written opinion within fifteen days of the examination. The written opinion shall be limited to the following information:

(A) The occupationally pertinent results of the medical examination and tests;

(B) The physician's opinion concerning whether the employee has any detected medical conditions which would place the employee's health at greater than normal risk of material impairment from exposure to benzene;

(C) The physician's recommended limitations upon the employee's exposure to benzene or upon the employee's use of protective clothing or equipment and respirators.

(D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions resulting from benzene exposure which require further explanation or treatment.

(ii) The written opinion obtained by the employer shall not reveal specific records, findings, and diagnoses that have no bearing on the employee's ability to work in a benzene-exposed workplace.

(h) Medical removal plan.

(i) When a physician makes a referral to a hematologist/internist as required under (e)(ii) of this subsection, the employee shall be removed from areas where exposures may exceed the action level until such time as the physician makes a determination under (h)(ii) of this subsection.

(ii) Following the examination and evaluation by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This decision shall be communicated in writing to the employer and employee. In the case of removal, the physician shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

(iii) For any employee who is removed pursuant to (h)(ii) of this subsection, the employer shall provide a follow-up examination. The physician, in consultation with the hematologist/internist, shall make a decision within six months of the date the employee was removed as to whether the employee shall be returned to the usual job or whether the employee should be removed permanently.

(iv) Whenever an employee is temporarily removed from benzene exposure pursuant to (h)(i) or (ii) of this subsection, the employer shall transfer the employee to a comparable job for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible, but in no event higher than the action level. The employer shall maintain the employee's current wage rate, seniority, and other benefits. If there is no such job available, the employer shall provide medical removal protection benefits until such a job becomes available or for six months, whichever comes first.

(v) Whenever an employee is removed permanently from benzene exposure based on a physician's recommendation pursuant to (h)(iii) of this subsection, the employee shall be given the opportunity to transfer to another position which is available or later becomes available for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible but in no event higher than the action level. The employer shall assure that such employee suffers no reduction in current wage rate, seniority, or other benefits as a result of the transfer.

(i) Medical removal protection benefits.

(ii) The employer shall provide to an employee six months of medical removal protection benefits immediately following each occasion an employee is removed from exposure to benzene because of hematological findings pursuant to (h)(i) and (ii) of this subsection, unless the employee has been transferred to a comparable job where benzene exposures are below the action level.

(iii) For the purposes of this section, the requirement that an employer provide medical removal protection benefits means that the employer shall maintain the current wage rate, seniority, and other benefits of an employee as though the employee had not been removed.

(iv) The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or from employment with another employer made possible by virtue of the employee's removal.

(10) Communication of benzene hazards to employees.

(a) Signs and labels.

(i) The employer shall post signs at entrances to regulated areas. The signs shall bear the following legend:

DANGER
BENZENE
CANCER HAZARD
FLAMMABLE-NO SMOKING
AUTHORIZED PERSONNEL ONLY
RESPIRATOR REQUIRED

(ii) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of benzene within the workplace. There is no requirement to label pipes. The labels shall comply with the requirements of WAC 296-62-05411 and in addition shall include the following legend:

DANGER
CONTAINS BENZENE
CANCER HAZARD

(b) Material safety data sheets.

(i) Employers shall obtain or develop, and shall provide access to their employees, to a material safety data sheet (MSDS) which addresses benzene and complies with WAC 296-62-054.

(ii) Employers who are manufacturers or importers shall:

(A) Comply with subsection (1) of this section; and

(B) Comply with the requirement in WISHA's hazard communication standard, WAC 296-62-054 (Hazard communication purpose), that they deliver to downstream employers an MSDS which addresses benzene.

(c) Information and training.

(i) The employer shall provide employees with information and training at the time of their initial assignment to a work area where benzene is present. If exposures are above the action level, employees shall be provided with information and training at least annually thereafter.

(ii) The training program shall be in accordance with the requirements of WAC 296-62-05415 (1) and (2), and shall include specific information on benzene for each category of information included in that section.

(iii) In addition to the information required under WAC 296-62-054, the employer shall:

(A) Provide employees with an explanation of the contents of this section, including Appendices A and B, and indicate to them where the standard is available; and

(B) Describe the medical surveillance program required under subsection (9) of this section, and explain the information contained in Appendix C.

(11) Recordkeeping.

(a) Exposure measurements.

(i) The employer shall establish and maintain an accurate record of all measurements required by subsection (5) of this section, in accordance with WAC 296-62-052.

(ii) This record shall include:

(A) The dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;

(B) A description of the sampling and analytical methods used;

(C) A description of the type of respiratory protective devices worn, if any; and

(D) The name, Social Security number, job classification, and exposure levels of the employee monitored and all other employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least the duration of employment plus thirty years, in accordance with Part B, Access to records, WAC 296-62-052 through 296-62-05223.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance required by subsection (9) of this section, in accordance with WAC 296-62-052.

(ii) This record shall include:

(A) The name and Social Security number of the employee;

(B) The employer's copy of the physician's written opinion on the initial, periodic, and special examinations, including results of medical examinations and all tests, opinions, and recommendations;

(C) Any employee medical complaints related to exposure to benzene;

(D) A copy of the information provided to the physician as required by subsection (9)(f)(ii) through (v) of this section; and

(E) A copy of the employee's medical and work history related to exposure to benzene or any other hematologic toxins.

(iii) The employer shall maintain this record for at least the duration of employment plus thirty years, in accordance with Part B, Access to records, WAC 296-62-052 through 296-62-05223.

(c) Availability.

(i) The employer shall assure that all records required to be maintained by this section shall be made available upon request to the director for examination and copying.

(ii) Employee exposure monitoring records required by this subsection shall be provided upon request for examination and copying to employees, employee representatives, and the director in accordance with WAC 296-62-05201 through 296-62-05209 and 296-62-05213 through 296-62-05217.

(iii) Employee medical records required by this subsection shall be provided upon request for examination and copying, to the subject employee, to anyone having the specific written consent of the subject employee, and to the director in accordance with WAC 296-62-052.

(d) Transfer of records.

(i) The employer shall comply with the requirements involving transfer of records set forth in WAC 296-62-05205.

(ii) If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the director, at least three months prior to disposal, and transmit them to the director if required by the director within that period.

(12) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees, or their designated representatives, an

opportunity to observe the measuring or monitoring of employee exposure to benzene conducted pursuant to subsection (5) of this section.

(b) Observation procedures. When observation of the measuring or monitoring of employee exposure to benzene requires entry into areas where the use of protective clothing and equipment or respirators is required, the employer shall provide the observer with personal protective clothing and equipment or respirators required to be worn by employees working in the area, assure the use of such clothing and equipment or respirators, and require the observer to comply with all other applicable safety and health procedures.

(13) Appendices. The information contained in WAC 296-62-07525, Appendices A, B, C, and D is not intended, by itself, to create any additional obligations not otherwise imposed or to detract from any existing obligations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07523, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07523, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07533 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07540 Formaldehyde. (1) Scope and application. This standard applies to all occupational exposures to formaldehyde, i.e., from formaldehyde gas, its solutions, and materials that release formaldehyde.

(2) Definitions. For purposes of this standard, the following definitions shall apply:

(a) "Action level" means a concentration of 0.5 part formaldehyde per million parts of air (0.5 ppm) calculated as an 8-hour time-weighted average (TWA) concentration.

(b) "Approved" means approved by the director of the department of labor and industries or his/her authorized representative: Provided, however, That should a provision of this chapter state that approval by an agency or organization other than the department of labor and industries is required, such as Underwriters' Laboratories or the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health, the provision of WAC 296-24-006 shall apply.

(c) "Authorized person" means any person required by work duties to be present in regulated work areas, or authorized to do so by the employer, by this section of the standard, or by the WISHA Act.

(d) "Director" means the director of the department of labor and industries, or his/her designated representative.

(e) "Emergency" is any occurrence, such as but not limited to equipment failure, rupture of containers, or failure of control equipment that results in an uncontrolled release of a significant amount of formaldehyde.

(f) "Employee exposure" means the exposure to airborne formaldehyde which would occur without corrections for protection provided by any respirator that is in use.

(g) "Formaldehyde" means the chemical substance, HCHO, Chemical Abstracts Service Registry No. 50-00-0.

(3) Permissible exposure limit (PEL).

(a) TWA: The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which

exceeds 0.75 part formaldehyde per million parts of air as an 8-hour TWA.

(b) Short term exposure limit (STEL): The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds two parts formaldehyde per million parts of air (2 ppm) as a fifteen-minute STEL.

(4) Exposure monitoring.

(a) General.

(i) Each employer who has a workplace covered by this standard shall monitor employees to determine their exposure to formaldehyde.

(ii) Exception. Where the employer documents, using objective data, that the presence of formaldehyde or formaldehyde-releasing products in the workplace cannot result in airborne concentrations of formaldehyde that would cause any employee to be exposed at or above the action level or the STEL under foreseeable conditions of use, the employer will not be required to measure employee exposure to formaldehyde.

(iii) When an employee's exposure is determined from representative sampling, the measurements used shall be representative of the employee's full shift or short-term exposure to formaldehyde, as appropriate.

(iv) Representative samples for each job classification in each work area shall be taken for each shift unless the employer can document with objective data that exposure levels for a given job classification are equivalent for different workshifts.

(b) Initial monitoring. The employer shall identify all employees who may be exposed at or above the action level or at or above the STEL and accurately determine the exposure of each employee so identified.

(i) Unless the employer chooses to measure the exposure of each employee potentially exposed to formaldehyde, the employer shall develop a representative sampling strategy and measure sufficient exposures within each job classification for each workshift to correctly characterize and not underestimate the exposure of any employee within each exposure group.

(ii) The initial monitoring process shall be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposure to formaldehyde.

(iii) If the employer receives reports or signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure, the employer shall promptly monitor the affected employee's exposure.

(c) Periodic monitoring.

(i) The employer shall periodically measure and accurately determine exposure to formaldehyde for employees shown by the initial monitoring to be exposed at or above the action level or at or above the STEL.

(ii) If the last monitoring results reveal employee exposure at or above the action level, the employer shall repeat monitoring of the employees at least every six months.

(iii) If the last monitoring results reveal employee exposure at or above the STEL, the employer shall repeat monitoring of the employees at least once a year under worst conditions.

(d) Termination of monitoring. The employer may discontinue periodic monitoring for employees if results from two consecutive sampling periods taken at least seven days apart show that employee exposure is below the action level and the STEL. The results must be statistically representative and consistent with the employer's knowledge of the job and work operation.

(e) Accuracy of monitoring. Monitoring shall be accurate, at the ninety-five percent confidence level, to within plus or minus twenty-five percent for airborne concentrations of formaldehyde at the TWA and the STEL and to within plus or minus thirty-five percent for airborne concentrations of formaldehyde at the action level.

(f) Employee notification of monitoring results. Within fifteen days of receiving the results of exposure monitoring conducted under this standard, the employer shall notify the affected employees of these results. Notification shall be in writing, either by distributing copies of the results to the employees or by posting the results. If the employee exposure is over either PEL, the employer shall develop and implement a written plan to reduce employee exposure to or below both PELs, and give written notice to employees. The written notice shall contain a description of the corrective action being taken by the employer to decrease exposure.

(g) Observation of monitoring.

(i) The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to formaldehyde required by this standard.

(ii) When observation of the monitoring of employee exposure to formaldehyde requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the clothing and equipment to the observer, require the observer to use such clothing and equipment, and assure that the observer complies with all other applicable safety and health procedures.

(5) Regulated areas.

(a) The employer shall establish regulated areas where the concentration of airborne formaldehyde exceeds either the TWA or the STEL and post all entrances and accessways with signs bearing the following information:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

(b) The employer shall limit access to regulated areas to authorized persons who have been trained to recognize the hazards of formaldehyde.

(c) An employer at a multi-employer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to other employers with work operations at that worksite.

(6) Methods of compliance.

(a) Engineering controls and work practices. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

(b) Exception. Whenever the employer has established that feasible engineering and work practice controls cannot

reduce employee exposure to or below either of the PELs, the employer shall apply these controls to reduce employee exposures to the extent feasible and shall supplement them with respirators which satisfy this standard.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Work operations, such as maintenance and repair activities or vessel cleaning, for which the employer establishes that engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce exposure to or below the PELs;

(iv) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1), 296-62-07131 (4)(b)(i) and (ii), and 296-62-07150 through 296-62-07156).

(ii) If air-purifying chemical-cartridge respirators are used, the employer must:

(A) Replace the cartridge after three hours of use or at the end of the workshift, whichever occurs first, unless the cartridge contains a NIOSH-certified end-of-service-life indicator (ESLI) to show when breakthrough occurs.

(B) Unless the canister contains a NIOSH-certified ESLI to show when breakthrough occurs, replace canisters used in atmospheres up to 7.5 ppm (10 x PEL) every four hours and industrial-sized canisters used in atmospheres up to 75 ppm (100 x PEL) every two hours, or at the end of the workshift, whichever occurs first.

(c) Respirator selection.

(i) The employer must select appropriate respirators from Table 1 of this section.

TABLE 1
MINIMUM REQUIREMENTS FOR RESPIRATORY PROTECTION
AGAINST FORMALDEHYDE

Condition of use or formaldehyde concentration (ppm)	Minimum respirator required ¹
Up to 7.5 ppm (10 x PEL)	Full facepiece with cartridges or canisters specifically approved for protection against formaldehyde ² .
Up to 75 ppm (100 x PEL).	Full-face mask with chin style or chest or back mounted type industrial size canister specifically approved for protection against formaldehyde. Type C supplied-air respirator pressure demand or continuous flow type, with full facepiece, hood, or helmet.
Above 75 ppm or unknown (emergencies) (100 x PEL).	Self-contained breathing apparatus (SCBA) with positive-pressure full facepiece.

TABLE 1
MINIMUM REQUIREMENTS FOR RESPIRATORY PROTECTION
AGAINST FORMALDEHYDE

	Combination supplied-air, full facepiece positive-pressure respirator with auxiliary self-contained air supply.
Fire fighting	SCBA with positive-pressure in full facepiece.
Escape.	SCBA in demand or pressure demand mode. Full-face mask with chin style or front or back mounted type industrial size canister specifically approved for protection against formaldehyde.

¹Respirators specified for use at higher concentrations may be used at lower concentrations.

² A half-mask respirator with cartridges specifically approved for protection against formaldehyde can be substituted for the full facepiece respirator providing that effective gas-proof goggles are provided and used in combination with the half-mask respirator.

(ii) The employer must provide a powered air-purifying respirator adequate to protect against formaldehyde exposure to any employee who has difficulty using a negative-pressure respirator.

(8) Protective equipment and clothing. Employers shall comply with the provisions of WAC 296-24-07501 and 296-24-07801. When protective equipment or clothing is provided under these provisions, the employer shall provide these protective devices at no cost to the employee and assure that the employee wears them.

(a) Selection. The employer shall select protective clothing and equipment based upon the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented.

(i) All contact of the eyes and skin with liquids containing one percent or more formaldehyde shall be prevented by the use of chemical protective clothing made of material impervious to formaldehyde and the use of other personal protective equipment, such as goggles and face shields, as appropriate to the operation.

(ii) Contact with irritating or sensitizing materials shall be prevented to the extent necessary to eliminate the hazard.

(iii) Where a face shield is worn, chemical safety goggles are also required if there is a danger of formaldehyde reaching the area of the eye.

(iv) Full body protection shall be worn for entry into areas where concentrations exceed 100 ppm and for emergency reentry into areas of unknown concentration.

(b) Maintenance of protective equipment and clothing.

(i) The employer shall assure that protective equipment and clothing that has become contaminated with formaldehyde is cleaned or laundered before its reuse.

(ii) When ventilating formaldehyde-contaminated clothing and equipment, the employer shall establish a storage area so that employee exposure is minimized. Containers for contaminated clothing and equipment and storage areas shall have labels and signs containing the following information:

DANGER

FORMALDEHYDE-CONTAMINATED (CLOTHING) EQUIPMENT
AVOID INHALATION AND SKIN CONTACT

(iii) The employer shall assure that only persons trained to recognize the hazards of formaldehyde remove the contaminated material from the storage area for purposes of cleaning, laundering, or disposal.

(iv) The employer shall assure that no employee takes home equipment or clothing that is contaminated with formaldehyde.

(v) The employer shall repair or replace all required protective clothing and equipment for each affected employee as necessary to assure its effectiveness.

(vi) The employer shall inform any person who launders, cleans, or repairs such clothing or equipment of formaldehyde's potentially harmful effects and of procedures to safely handle the clothing and equipment.

(9) Hygiene protection.

(a) The employer shall provide change rooms, as described in WAC 296-24-120 for employees who are required to change from work clothing into protective clothing to prevent skin contact with formaldehyde.

(b) If employees' skin may become splashed with solutions containing one percent or greater formaldehyde, for example because of equipment failure or improper work practices, the employer shall provide conveniently located quick drench showers and assure that affected employees use these facilities immediately.

(c) If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1 percent or greater formaldehyde, the employer shall provide acceptable eye-wash facilities within the immediate work area for emergency use.

(10) Housekeeping. For operations involving formaldehyde liquids or gas, the employer shall conduct a program to detect leaks and spills, including regular visual inspections.

(a) Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.

(b) In work areas where spillage may occur, the employer shall make provisions to contain the spill, to decontaminate the work area, and to dispose of the waste.

(c) The employer shall assure that all leaks are repaired and spills are cleaned promptly by employees wearing suitable protective equipment and trained in proper methods for cleanup and decontamination.

(d) Formaldehyde-contaminated waste and debris resulting from leaks or spills shall be placed for disposal in sealed containers bearing a label warning of formaldehyde's presence and of the hazards associated with formaldehyde.

(11) Emergencies. For each workplace where there is the possibility of an emergency involving formaldehyde, the employer shall assure appropriate procedures are adopted to minimize injury and loss of life. Appropriate procedures shall be implemented in the event of an emergency.

(12) Medical surveillance.

(a) Employees covered.

(i) The employer shall institute medical surveillance programs for all employees exposed to formaldehyde at concen-

trations at or exceeding the action level or exceeding the STEL.

(ii) The employer shall make medical surveillance available for employees who develop signs and symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in emergencies. When determining whether an employee may be experiencing signs and symptoms of possible overexposure to formaldehyde, the employer may rely on the evidence that signs and symptoms associated with formaldehyde exposure will occur only in exceptional circumstances when airborne exposure is less than 0.1 ppm and when formaldehyde is present in materials in concentrations less than 0.1 percent.

(b) Examination by a physician. All medical procedures, including administration of medical disease questionnaires, shall be performed by or under the supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

(c) Medical disease questionnaire. The employer shall make the following medical surveillance available to employees prior to assignment to a job where formaldehyde exposure is at or above the action level or above the STEL and annually thereafter. The employer shall also make the following medical surveillance available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde.

(i) Administration of a medical disease questionnaire, such as in Appendix D, which is designed to elicit information on work history, smoking history, any evidence of eye, nose, or throat irritation; chronic airway problems or hyperreactive airway disease; allergic skin conditions or dermatitis; and upper or lower respiratory problems.

(ii) A determination by the physician, based on evaluation of the medical disease questionnaire, of whether a medical examination is necessary for employees not required to wear respirators to reduce exposure to formaldehyde.

(d) Medical examinations. Medical examinations shall be given to any employee who the physician feels, based on information in the medical disease questionnaire, may be at increased risk from exposure to formaldehyde and at the time of initial assignment and at least annually thereafter to all employees required to wear a respirator to reduce exposure to formaldehyde. The medical examination shall include:

(i) A physical examination with emphasis on evidence of irritation or sensitization of the skin and respiratory system, shortness of breath, or irritation of the eyes.

(ii) Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. As a minimum, these tests shall consist of forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and forced expiratory flow (FEF).

(iii) Any other test which the examining physician deems necessary to complete the written opinion.

(iv) Counseling of employees having medical conditions that would be directly or indirectly aggravated by exposure to formaldehyde on the increased risk of impairment of their health.

(e) Examinations for employees exposed in an emergency. The employer shall make medical examinations avail-

able as soon as possible to all employees who have been exposed to formaldehyde in an emergency.

(i) The examination shall include a medical and work history with emphasis on any evidence of upper or lower respiratory problems, allergic conditions, skin reaction or hypersensitivity, and any evidence of eye, nose, or throat irritation.

(ii) Other examinations shall consist of those elements considered appropriate by the examining physician.

(f) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this standard and Appendices A, C, D, and E;

(ii) A description of the affected employee's job duties as they relate to the employee's exposure to formaldehyde;

(iii) The representative exposure level for the employee's job assignment;

(iv) Information concerning any personal protective equipment and respiratory protection used or to be used by the employee; and

(v) Information from previous medical examinations of the affected employee within the control of the employer.

(vi) In the event of a nonroutine examination because of an emergency, the employer shall provide to the physician as soon as possible: A description of how the emergency occurred and the exposure the victim may have received.

(g) Physician's written opinion.

(i) For each examination required under this standard, the employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde. The written opinion shall include:

(A) The physician's opinion as to whether the employee has any medical condition that would place the employee at an increased risk of material impairment of health from exposure to formaldehyde;

(B) Any recommended limitations on the employee's exposure or changes in the use of personal protective equipment, including respirators;

(C) A statement that the employee has been informed by the physician of any medical conditions which would be aggravated by exposure to formaldehyde, whether these conditions may have resulted from past formaldehyde exposure or from exposure in an emergency, and whether there is a need for further examination or treatment.

(ii) The employer shall provide for retention of the results of the medical examination and tests conducted by the physician.

(iii) The employer shall provide a copy of the physician's written opinion to the affected employee within fifteen days of its receipt.

(h) Medical removal.

(i) The provisions of this subdivision apply when an employee reports significant irritation of the mucosa of the eyes or of the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization attributed to workplace formaldehyde exposure. Medical removal provisions do not apply in case of dermal irritation or dermal sensitization

when the product suspected of causing the dermal condition contains less than 0.05% formaldehyde.

(ii) An employee's report of signs or symptoms of possible overexposure to formaldehyde shall be evaluated by a physician selected by the employer pursuant to (c) of this subsection. If the physician determines that a medical examination is not necessary under (c)(ii) of this subsection, there shall be a two-week evaluation and remediation period to permit the employer to ascertain whether the signs or symptoms subside untreated or with the use of creams, gloves, first aid treatment, or personal protective equipment. Industrial hygiene measures that limit the employee's exposure to formaldehyde may also be implemented during this period. The employee shall be referred immediately to a physician prior to expiration of the two-week period if the signs or symptoms worsen. Earnings, seniority, and benefits may not be altered during the two-week period by virtue of the report.

(iii) If the signs or symptoms have not subsided or been remedied by the end of the two-week period, or earlier if signs or symptoms warrant, the employee shall be examined by a physician selected by the employer. The physician shall presume, absent contrary evidence, that observed dermal irritation or dermal sensitization are not attributable to formaldehyde when products to which the affected employee is exposed contain less than 0.1% formaldehyde.

(iv) Medical examinations shall be conducted in compliance with the requirements of (e)(i) and (ii) of this subsection. Additional guidelines for conducting medical exams are contained in WAC 296-62-07546, Appendix C.

(v) If the physician finds that significant irritation of the mucosa of the eyes or the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization result from workplace formaldehyde exposure and recommends restrictions or removal. The employer shall promptly comply with the restrictions or recommendations of removal. In the event of a recommendation of removal, the employer shall remove the affected employee from the current formaldehyde exposure and if possible, transfer the employee to work having no or significantly less exposure to formaldehyde.

(vi) When an employee is removed pursuant to item (v) of this subdivision, the employer shall transfer the employee to comparable work for which the employee is qualified or can be trained in a short period (up to six months), where the formaldehyde exposures are as low as possible, but not higher than the action level. The employer shall maintain the employee's current earnings, seniority, and other benefits. If there is no such work available, the employer shall maintain the employee's current earnings, seniority, and other benefits until such work becomes available, until the employee is determined to be unable to return to workplace formaldehyde exposure, until the employee is determined to be able to return to the original job status, or for six months, whichever comes first.

(vii) The employer shall arrange for a follow-up medical examination to take place within six months after the employee is removed pursuant to this subsection. This examination shall determine if the employee can return to the original job status, or if the removal is to be permanent. The physician shall make a decision within six months of the date the employee was removed as to whether the employee can be

returned to the original job status, or if the removal is to be permanent.

(viii) An employer's obligation to provide earnings, seniority, and other benefits to a removed employee may be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program or from employment with another employer made possible by virtue of the employee's removal.

(ix) In making determinations of the formaldehyde content of materials under this subsection the employer may rely on objective data.

(i) Multiple physician review.

(i) After the employer selects the initial physician who conducts any medical examination or consultation to determine whether medical removal or restriction is appropriate, the employee may designate a second physician to review any findings, determinations, or recommendations of the initial physician and to conduct such examinations, consultations, and laboratory tests as the second physician deems necessary and appropriate to evaluate the effects of formaldehyde exposure and to facilitate this review.

(ii) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction.

(iii) The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen days after receipt of the notification of the right to seek a second medical opinion, or receipt of the initial physician's written opinion, whichever is later:

(A) The employee informs the employer of the intention to seek a second medical opinion; and

(B) The employee initiates steps to make an appointment with a second physician.

(iv) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve the disagreement. If the two physicians are unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician who shall be a specialist in the field at issue:

(A) To review the findings, determinations, or recommendations of the prior physicians; and

(B) To conduct such examinations, consultations, laboratory tests, and discussions with prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.

(v) In the alternative, the employer and the employee or authorized employee representative may jointly designate such third physician.

(vi) The employer shall act consistent with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(13) Hazard communication.

(a) General. Notwithstanding any exemption granted in WAC 296-62-05403 (6)(c) for wood products, each employer who has a workplace covered by this standard shall comply with the requirements of WAC 296-62-05409 through 296-62-05419. The definitions of the hazard communication standard shall apply under this standard.

(i) The following shall be subject to the hazard communication requirements of this section: Formaldehyde gas, all mixtures or solutions composed of greater than 0.1 percent formaldehyde, and materials capable of releasing formaldehyde into the air under reasonably foreseeable concentrations reaching or exceeding 0.1 ppm.

(ii) As a minimum, specific health hazards that the employer shall address are: Cancer, irritation and sensitization of the skin and respiratory system, eye and throat irritation, and acute toxicity.

(b) Manufacturers and importers who produce or import formaldehyde or formaldehyde-containing products shall provide downstream employers using or handling these products with an objective determination through the required labels and MSDSs if these items may constitute a health hazard within the meaning of WAC 296-62-05407 under normal conditions of use.

(c) Labels.

(i) The employer shall assure that hazard warning labels complying with the requirements of WAC 296-62-05411 are affixed to all containers of materials listed in (a)(i) of this subsection, except to the extent that (a)(i) of this subsection is inconsistent with this item.

(ii) Information on labels. As a minimum, for all materials listed in (a)(i) of this subsection, capable of releasing formaldehyde at levels of 0.1 ppm to 0.5 ppm, labels shall identify that the product contains formaldehyde: List the name and address of the responsible party; and state that physical and health hazard information is readily available from the employer and from material safety data sheets.

(iii) For materials listed in (a)(i) of this subsection, capable of releasing formaldehyde at levels above 0.5 ppm, labels shall appropriately address all the hazards as defined in Part C, WAC 296-62-054 through 296-62-05425, and Appendices A and B, including respiratory sensitization, and shall contain the words "Potential Cancer Hazard."

(iv) In making the determinations of anticipated levels of formaldehyde release, the employer may rely on objective data indicating the extent of potential formaldehyde release under reasonably foreseeable conditions of use.

(v) Substitute warning labels. The employer may use warning labels required by other statutes, regulations, or ordinances which impart the same information as the warning statements required by this subitem.

(d) Material safety data sheets.

(i) Any employer who uses formaldehyde-containing materials listed in (a)(i) of this subsection shall comply with the requirements of WAC 296-62-05413 with regard to the development and updating of material safety data sheets.

(ii) Manufacturers, importers, and distributors of formaldehyde containing materials listed in (a)(i) of this subsection shall assure that material safety data sheets and updated information are provided to all employers purchasing such

materials at the time of the initial shipment and at the time of the first shipment after a material safety data sheet is updated.

(e) Written hazard communication program. The employer shall develop, implement, and maintain at the workplace, a written hazard communication program for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this section for labels and other forms of warning and material safety data sheets, and subsection (14) of this section for employee information and training, will be met. Employees in multi-employer workplaces shall comply with the requirements of WAC 296-62-05409 (2)(b).

(14) Employee information and training.

(a) Participation. The employer shall assure that all employees who are assigned to workplaces where there is a health hazard from formaldehyde participate in a training program, except that where the employer can show, using objective data, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training.

(b) Frequency. Employers shall provide such information and training to employees at the time of their initial assignment and whenever a new exposure to formaldehyde is introduced into their work area. The training shall be repeated at least annually.

(c) Training program. The training program shall be conducted in a manner which the employee is able to understand and shall include:

(i) A discussion of the contents of this regulation and the contents of the material safety data sheet;

(ii) The purpose for and a description of the medical surveillance program required by this standard, including:

(A) A description of the potential health hazards associated with exposure to formaldehyde and a description of the signs and symptoms of exposure to formaldehyde.

(B) Instructions to immediately report to the employer the development of any adverse signs or symptoms that the employee suspects is attributable to formaldehyde exposure.

(iii) Description of operations in the work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure to formaldehyde in each job;

(iv) The purpose for, proper use of, and limitations of personal protective clothing;

(v) Instructions for the handling of spills, emergencies, and clean-up procedures;

(vi) An explanation of the importance of engineering and work practice controls for employee protection and any necessary instruction in the use of these controls;

(vii) A review of emergency procedures including the specific duties or assignments of each employee in the event of an emergency; and

(viii) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by chapter 296-62 WAC, Part E.

(d) Access to training materials.

(i) The employer shall inform all affected employees of the location of written training materials and shall make these materials readily available, without cost, to the affected employees.

(ii) The employer shall provide, upon request, all training materials relating to the employee training program to the director of labor and industries, or his/her designated representative.

(15) Recordkeeping.

(a) Exposure measurements. The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to formaldehyde. This record shall include:

(i) The date of measurement;

(ii) The operation being monitored;

(iii) The methods of sampling and analysis and evidence of their accuracy and precision;

(iv) The number, durations, time, and results of samples taken;

(v) The types of protective devices worn; and

(vi) The names, job classifications, Social Security numbers, and exposure estimates of the employees whose exposures are represented by the actual monitoring results.

(b) Exposure determinations. Where the employer has determined that no monitoring is required under this standard, the employer shall maintain a record of the objective data relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level.

(c) Medical surveillance. The employer shall establish and maintain an accurate record for each employee subject to medical surveillance under this standard. This record shall include:

(i) The name and Social Security number of the employee;

(ii) The physician's written opinion;

(iii) A list of any employee health complaints that may be related to exposure to formaldehyde; and

(iv) A copy of the medical examination results, including medical disease questionnaires and results of any medical tests required by the standard or mandated by the examining physician.

(d) Record retention. The employer shall retain records required by this standard for at least the following periods:

(i) Exposure records and determinations shall be kept for at least thirty years; and

(ii) Medical records shall be kept for the duration of employment plus thirty years.

(e) Availability of records.

(i) Upon request, the employer shall make all records maintained as a requirement of this standard available for examination and copying to the director of labor and industries, or his/her designated representative.

(ii) The employer shall make employee exposure records, including estimates made from representative monitoring and available upon request for examination and copying, to the subject employee, or former employee, and employee representatives in accordance with WAC 296-62-052 through 296-62-05209 and 296-62-05213 through 296-62-05217.

(iii) Employee medical records required by this standard shall be provided upon request for examination and copying, to the subject employee, or former employee, or to anyone having the specific written consent of the subject employee

or former employee in accordance with WAC 296-62-05201 through 296-62-05209, and 296-62-05213 through 296-62-05217.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07540, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07540, filed 7/20/94, effective 9/20/94; 92-23-017 (Order 92-13), § 296-62-07540, filed 11/10/92, effective 12/18/92; 91-11-070 (Order 91-01), § 296-62-07540, filed 5/20/91, effective 6/20/91; 90-03-029 (Order 89-20), § 296-62-07540, filed 1/11/90, effective 2/26/90; 88-21-002 (Order 88-23), § 296-62-07540, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07542 Appendix A—Substance technical guideline for formalin. (1) The following substance technical guideline for formalin provides information on uninhibited formalin solution (thirty-seven percent formaldehyde, no methanol stabilizer). It is designed to inform employees at the production level of their rights and duties under the formaldehyde standard whether their job title defines them as workers or supervisors. Much of the information provided is general; however, some information is specific for formalin. When employee exposure to formaldehyde is from resins capable of releasing formaldehyde, the resin itself and other impurities or decomposition products may also be toxic, and employers should include this information as well when informing employees of the hazards associated with the materials they handle. The precise hazards associated with exposure to formaldehyde depend both on the form (solid, liquid, or gas) of the material and the concentration of formaldehyde present. For example, thirty-seven to fifty percent solutions of formaldehyde present a much greater hazard to the skin and eyes from spills or splashes than solutions containing less than one percent formaldehyde. Individual substance technical guidelines used by the employer for training employees should be modified to properly give information on the material actually being used.

(a) Substance identification.

(i) Chemical name: Formaldehyde.

(ii) Chemical family: Aldehyde.

(iii) Chemical formula: HCHO.

(iv) Molecular weight: 30.03.

(v) Chemical abstracts service number (CAS number): 50-00-0.

Synonyms: Formalin; Formic Aldehyde; Paraform; Formol; Formalin (Methanol-free); Fyde; Formalith; Methanal; Methyl Aldehyde; Methylene Glycol; Methylene Oxide; Tetraoxymethalene; Oxomethane; Oxymethylene.

(b) Components and contaminants.

(i) Percent: 37.0 Formaldehyde.

(ii) Percent: 63.0 water.

Note: Inhibited solutions contain methanol.

(iii) Other contaminants: Formic acid (alcohol free).

Exposure limits:

(A) WISHA TWA-0.75 ppm.

(B) WISHA STEL-2 ppm.

(c) Physical data.

(i) Description: Colorless liquid, pungent odor.

(ii) Boiling point: 214°F (101°C).

(iii) Specific gravity: 1.08 (H₂O=1 @ 20 C).

(iv) pH: 2.8-4.0.

(v) Solubility in water: Miscible.

(vi) Solvent solubility: Soluble in alcohol and acetone.

(vii) Vapor density: 1.04 (Air=1 @ 20 C).

(viii) Odor threshold: 0.8-1 ppm.

(d) Fire and explosion hazard.

(i) Moderate fire and explosion hazard when exposed to heat or flame.

(ii) The flash point of thirty-seven percent formaldehyde solutions is above normal room temperature, but the explosion range is very wide, from seven to seventy-three percent by volume in air.

(iii) Reaction of formaldehyde with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid yields explosive compounds.

(iv) Flash point: 185°F (85°C) closed cup.

(v) Lower explosion limit: Seven percent.

(vi) Upper explosion limit: Seventy-three percent.

(vii) Autoignition temperature: 806°F (430°C).

(viii) Flammable class (WISHA): III A.

Extinguishing media:

(I) Use dry chemical, "alcohol foam," carbon dioxide, or water in flooding amounts as fog. Solid streams may not be effective. Cool fire-exposed containers with water from side until well after fire is out.

(II) Use of water spray to flush spills can also dilute the spill to produce nonflammable mixtures. Water runoff, however, should be contained for treatment.

(ix) National Fire Protection Association Section 325M Designation:

(A) Health: 2-Materials hazardous to health, but areas may be entered with full-faced mask self-contained breathing apparatus which provides eye protection.

(B) Flammability: 2-Materials which must be moderately heated before ignition will occur. Water spray may be used to extinguish the fire because the material can be cooled below its flash point.

(C) Reactivity: D-Materials which (in themselves) are normally stable even under fire exposure conditions and which are not reactive with water. Normal fire fighting procedures may be used.

(e) Reactivity.

(i) Stability: Formaldehyde solutions may self-polymerize to form paraformaldehyde which precipitates.

(ii) Incompatibility (materials to avoid):

(A) Strong oxidizing agents, caustics, strong alkalies, isocyanates, anhydrides, oxides, and inorganic acids.

(B) Formaldehyde reacts with hydrochloric acid to form the potent carcinogen, bis-chloromethyl ether. Formaldehyde reacts with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid to yield explosive compounds. A violent reaction occurs when formaldehyde is mixed with strong oxidizers.

(C) Hazardous combustion or decomposition products: Oxygen from the air can oxidize formaldehyde to formic acid, especially when heated. Formic acid is corrosive.

(f) Health hazard data.

(i) Acute effects of exposure.

(A) Ingestion (swallowing): Liquids containing ten to forty percent formaldehyde cause severe irritation and inflammation of the mouth, throat, and stomach. Severe

stomach pains will follow ingestion with possible loss of consciousness and death. Ingestion of dilute formaldehyde solutions (0.03-0.04%) may cause discomfort in the stomach and pharynx.

(B) Inhalation (breathing):

(I) Formaldehyde is highly irritating to the upper respiratory tract and eyes. Concentrations of 0.5 to 2.0 ppm may irritate the eyes, nose, and throat of some individuals.

(II) Concentrations of 3 to 5 ppm also cause tearing of the eyes and are intolerable to some persons.

(III) Concentrations of 10 to 20 ppm cause difficulty in breathing, burning of the nose and throat, coughing, and heavy tearing of the eyes, and 25 to 30 ppm causes severe respiratory tract injury leading to pulmonary edema and pneumonitis. A concentration of 100 ppm is immediately dangerous to life and health. Deaths from accidental exposure to high concentrations of formaldehyde have been reported.

(C) Skin (dermal): Formalin is a severe skin irritant and a sensitizer. Contact with formalin causes white discoloration, smarting, drying, cracking, and scaling. Prolonged and repeated contact can cause numbness and a hardening or tanning of the skin. Previously exposed persons may react to future exposure with an allergic eczematous dermatitis or hives.

(D) Eye contact: Formaldehyde solutions splashed in the eye can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. The severity of the effect depends on the concentration of formaldehyde in the solution and whether or not the eyes are flushed with water immediately after the accident.

Note: The perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts to formaldehyde. This can lead to overexposure if a worker is relying on formaldehyde's warning properties to alert him or her to the potential for exposure.

(E) Acute animal toxicity:

(I) Oral, rats: LD50=800 mg/kg.

(II) Oral, mouse: LD50=42 mg/kg.

(III) Inhalation, rats: LC50=250 mg/kg.

(IV) Inhalation, mouse: LC50=900 mg/kg.

(V) Inhalation, rats: LC50=590 mg/kg.

(g) Chronic effects of exposure.

(i) Carcinogenicity: Formaldehyde has the potential to cause cancer in humans. Repeated and prolonged exposure increases the risk. Various animal experiments have conclusively shown formaldehyde to be a carcinogen in rats. In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages.

(ii) Mutagenicity: Formaldehyde is genotoxic in several in vitro test systems showing properties of both an initiator and a promoter.

(iii) Toxicity: Prolonged or repeated exposure to formaldehyde may result in respiratory impairment. Rats exposed to formaldehyde at 2 ppm developed benign nasal tumors and changes of the cell structure in the nose as well as inflamed mucous membranes of the nose. Structural changes in the epithelial cells in the human nose have also been observed. Some persons have developed asthma or bronchitis following exposure to formaldehyde, most often as the result of an acci-

idental spill involving a single exposure to a high concentration of formaldehyde.

(h) Emergency and first-aid procedures.

(i) Ingestion (swallowing): If the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde. Keep affected person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

(ii) Inhalation (breathing): Remove the victim from the exposure area to fresh air immediately. Where the formaldehyde concentration may be very high, each rescuer must put on a self-contained breathing apparatus before attempting to remove the victim, and medical personnel should be informed of the formaldehyde exposure immediately. If breathing has stopped, give artificial respiration. Keep the affected person warm and at rest. Qualified first-aid or medical personnel should administer oxygen, if available, and maintain the patient's airways and blood pressure until the victim can be transported to a medical facility. If exposure results in a highly irritated upper respiratory tract and coughing continues for more than ten minutes, the worker should be hospitalized for observation and treatment.

(iii) Skin contact: Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with soap or mild detergent and large amounts of water until no evidence of the chemical remains (at least fifteen to twenty minutes). If there are chemical burns, get first aid to cover the area with sterile, dry dressing, and bandages. Get medical attention if you experience appreciable eye or respiratory irritation.

(iv) Eye contact: Wash the eyes immediately with large amounts of water occasionally lifting lower and upper lids, until no evidence of chemical remains (at least fifteen to twenty minutes). In case of burns, apply sterile bandages loosely without medication. Get medical attention immediately. If you have experienced appreciable eye irritation from a splash or excessive exposure, you should be referred promptly to an ophthalmologist for evaluation.

(i) Emergency procedures.

(i) Emergencies:

(A) If you work in an area where a large amount of formaldehyde could be released in an accident or from equipment failure, your employer must develop procedures to be followed in event of an emergency. You should be trained in your specific duties in the event of an emergency, and it is important that you clearly understand these duties. Emergency equipment must be accessible and you should be trained to use any equipment that you might need. Formaldehyde contaminated equipment must be cleaned before reuse.

(B) If a spill of appreciable quantity occurs, leave the area quickly unless you have specific emergency duties. Do not touch spilled material. Designated persons may stop the leak and shut off ignition sources if these procedures can be done without risk. Designated persons should isolate the hazard area and deny entry except for necessary people protected by suitable protective clothing and respirators adequate for the exposure. Use water spray to reduce vapors. Do not smoke, and prohibit all flames or flares in the hazard area.

(ii) Special fire fighting procedures:

(A) Learn procedures and responsibilities in the event of a fire in your workplace.

(B) Become familiar with the appropriate equipment and supplies and their location.

(C) In fire fighting, withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire.

(j) Spill, leak, and disposal procedures.

(i) Occupational spill: For small containers, place the leaking container in a well ventilated area. Take up small spills with absorbent material and place the waste into properly labeled containers for later disposal. For larger spills, dike the spill to minimize contamination and facilitate salvage or disposal. You may be able to neutralize the spill with sodium hydroxide or sodium sulfite. Your employer must comply with EPA rules regarding the clean-up of toxic waste and notify state and local authorities, if required. If the spill is greater than 1,000 lb/day, it is reportable under EPA's superfund legislation.

(ii) Waste disposal: Your employer must dispose of waste containing formaldehyde in accordance with applicable local, state, and federal law and in a manner that minimizes exposure of employees at the site and of the clean-up crew.

(k) Monitoring and measurement procedures.

(i) Monitoring requirements: If your exposure to formaldehyde exceeds the 0.5 ppm action level or the 2 ppm STEL, your employer must monitor your exposure. Your employer need not measure every exposure if a "high exposure" employee can be identified. This person usually spends the greatest amount of time nearest the process equipment. If you are a "representative employee," you will be asked to wear a sampling device to collect formaldehyde. This device may be a passive badge, a sorbent tube attached to a pump, or an impinger containing liquid. You should perform your work as usual, but inform the person who is conducting the monitoring of any difficulties you are having wearing the device.

(ii) Evaluation of 8-hour exposure: Measurements taken for the purpose of determining time-weighted average (TWA) exposures are best taken with samples covering the full shift. Samples collected must be taken from the employee's breathing zone air.

(iii) Short-term exposure evaluation: If there are tasks that involve brief but intense exposure to formaldehyde, employee exposure must be measured to assure compliance with the STEL. Sample collections are for brief periods, only fifteen minutes, but several samples may be needed to identify the peak exposure.

(iv) Monitoring techniques: WISHA's only requirement for selecting a method for sampling and analysis is that the methods used accurately evaluate the concentration of formaldehyde in employees' breathing zones. Sampling and analysis may be performed by collection of formaldehyde on liquid or solid sorbents with subsequent chemical analysis. Sampling and analysis may also be performed by passive diffusion monitors and short-term exposure may be measured by instruments such as real-time continuous monitoring systems and portable direct reading instruments.

(v) Notification of results: Your employer must inform you of the results of exposure monitoring representative of

your job. You may be informed in writing, but posting the results where you have ready access to them constitutes compliance with the standard.

(l) Protective equipment and clothing.

(Material impervious to formaldehyde is needed if the employee handles formaldehyde solutions of one percent or more. Other employees may also require protective clothing or equipment to prevent dermatitis.)

(i) Respiratory protection. Use NIOSH-approved full facepiece negative pressure respirators equipped with approved cartridges or canisters within the use limitations of these devices. (Present restrictions on cartridges and canisters do not permit them to be used for a full workshift.) In all other situations, use positive pressure respirators such as the positive-pressure air purifying respirator or the self-contained breathing apparatus (SCBA).

(ii) Protective gloves:

(A) Wear protective (impervious) gloves provided by your employer, at no cost, to prevent contact with formalin.

(B) Your employer should select these gloves based on the results of permeation testing and in accordance with the ACGIH guidelines for selection of chemical protective clothing.

(iii) Eye protection:

(A) If you might be splashed in the eyes with formalin, it is essential that you wear goggles or some other type of complete protection for the eye.

(B) You may also need a face shield if your face is likely to be splashed with formalin, but you must not substitute face shields for eye protection. (This section pertains to formaldehyde solutions of one percent or more.)

(iv) Other protective equipment:

(A) You must wear protective (impervious) clothing and equipment provided by your employer at no cost to prevent repeated or prolonged contact with formaldehyde liquids.

(B) If you are required to change into whole-body chemical protective clothing, your employer must provide a change room for your privacy and for storage of your normal clothing.

(C) If you are splashed with formaldehyde, use the emergency showers and eyewash fountains provided by your employer immediately to prevent serious injury. Report the incident to your supervisor and obtain necessary medical support.

(2) Entry into an IDLH atmosphere. Enter areas where the formaldehyde concentration might be 100 ppm or more only with complete body protection including a self-contained breathing apparatus with a full facepiece operated in a positive pressure mode or a supplied-air respirator with full facepiece and operated in a positive pressure mode. This equipment is essential to protect your life and health under such extreme conditions.

(a) Engineering controls.

(i) Ventilation is the most widely applied engineering control method for reducing the concentration of airborne substances in the breathing zones of workers. There are two distinct types of ventilation.

(ii) Local exhaust: Local exhaust ventilation is designed to capture airborne contaminants as near to the point of generation as possible. To protect you, the direction of contami-

nant flow must always be toward the local exhaust system inlet and away from you.

(iii) General (mechanical):

(A) General dilution ventilation involves continuous introduction of fresh air into the workroom to mix with the contaminated air and lower your breathing zone concentration of formaldehyde. Effectiveness depends on the number of air changes per hour.

(B) Where devices emitting formaldehyde are spread out over a large area, general dilution ventilation may be the only practical method of control.

(iv) Work practices: Work practices and administrative procedures are an important part of a control system. If you are asked to perform a task in a certain manner to limit your exposure to formaldehyde, it is extremely important that you follow these procedures.

(b) Medical surveillance.

(i) Medical surveillance helps to protect employees' health. You are encouraged strongly to participate in the medical surveillance program.

(ii) Your employer must make a medical surveillance program available at no expense to you and at a reasonable time and place if you are exposed to formaldehyde at concentrations above 0.5 ppm as an 8-hour average or 2 ppm over any fifteen-minute period.

(A) You will be offered medical surveillance at the time of your initial assignment and once a year afterward as long as your exposure is at least 0.5 ppm (action level) or 2 ppm (STEL).

(B) Even if your exposure is below these levels, you should inform your employer if you have signs and symptoms that you suspect, through your training, are related to your formaldehyde exposure because you may need medical surveillance to determine if your health is being impaired by your exposure.

(iii) The surveillance plan includes:

(A) A medical disease questionnaire.

(B) A physical examination if the physician determines this is necessary.

(iv) If you are required to wear a respirator, your employer must offer you a physical examination and a pulmonary function test every year.

(v) The physician must collect all information needed to determine if you are at increased risk from your exposure to formaldehyde. At the physician's discretion, the medical examination may include other tests, such as a chest x-ray, to make this determination.

(vi) After a medical examination the physician will provide your employer with a written opinion which includes any special protective measures recommended and any restrictions on your exposure. The physician must inform you of any medical conditions you have which would be aggravated by exposure to formaldehyde. All records from your medical examinations, including disease surveys, must be retained at your employer's expense.

(c) Emergencies.

(i) If you are exposed to formaldehyde in an emergency and develop signs or symptoms associated with acute toxicity from formaldehyde exposure, your employer must provide you with a medical examination as soon as possible.

(ii) This medical examination will include all steps necessary to stabilize your health.

(iii) You may be kept in the hospital for observation if your symptoms are severe to ensure that any delayed effects are recognized and treated.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-07542, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07542, filed 7/20/94, effective 9/20/94; 92-23-017 (Order 92-13), § 296-62-07542, filed 11/10/92, effective 12/18/92; 88-21-002 (Order 88-23), § 296-62-07542, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07550 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07615 Respiratory protection. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations for which the employer establishes that engineering and work-practice controls are not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce exposure to or below the PEL;

(d) Emergencies.

(2) Respirator program. The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(3) Respirator selection.

(a) The employer must select, and ensure that employees use, the appropriate respirator from Table 1 of this section.

Table 1.—Respiratory Protection for MDA

Airborne concentration of MDA or condition of use	Respirator type
a. Less than or equal to 10xPEL	(1) Half-mask respirator with HEPA ¹ cartridge ² .
b. Less than or equal to 50xPEL	(1) Full facepiece respirator with HEPA ¹ cartridge or canister ² .
c. Less than or equal to 1000xPEL	(1) Full facepiece powered air-purifying respirator with HEPA ¹ cartridges ² .
d. Greater than 1000xPEL or	(1) Self-contained breathing unknown concentrations apparatus with full facepiece in positive pressure mode;
	(2) Full facepiece positive pressure demand supplied-air respirator with auxiliary self-contained air supply.
e. Escape	(1) Any full facepiece air-purifying respirator with HEPA ¹ cartridges ² ;
	(2) Any positive pressure or continuous flow self-contained breathing apparatus with full facepiece or hood.
f. Fire fighting	(1) Full facepiece self-contained breathing apparatus in positive pressure demand mode.

Note: Respirators assigned for higher environmental concentrations may be used at lower concentrations.

¹ High efficiency particulate in air filter (HEPA) means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers or larger.

² Combination HEPA/organic vapor cartridges shall be used whenever MDA in liquid form or a process requiring heat is used.

(b) Any employee who cannot use a negative-pressure respirator must be given the option of using a positive-pressure respirator, or a supplied-air respirator operated in the continuous-flow or pressure-demand mode.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07615, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07615, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07635 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07639 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07662 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07664 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07666 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07668 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07670 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07672 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-07701 Scope and application. (1) WAC 296-62-07701 through 296-62-07753 applies to all occupational exposures to asbestos in all industries covered by chapter 49.17 RCW, Washington Industrial Safety and Health Act and chapter 49.26 RCW, Health and safety—Asbestos.

(2) This part applies to construction work as defined in WAC 296-155-012 except for work involving asbestos-containing asphalt roof coatings, cements, and mastics. The exception for roofing materials does not apply to asphalt coated asbestos felting and similar built-up roofing.

(3) This part applies to ship repairing, shipbuilding and shipbreaking employments and related employments as defined in WAC 296-304-01001 except for work involving asbestos-containing asphalt roof coatings, cements, and mastics. The exception for roofing materials does not apply to asphalt coated asbestos felting and similar built-up roofing.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07701, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07701, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07701, filed 11/30/87. Stat-

utory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07701, filed 4/27/87.]

WAC 296-62-07703 Definitions. For the purpose of WAC 296-62-07701 through 296-62-07753:

Accredited inspector means any person meeting the accreditation requirements of the Federal Toxic Substance Control Act, Section 206(a)(1) and (3). 15 U.S.C. 2646(a)(1) and (3).

Aggressive method means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

Amended water means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

For purposes of this standard, "asbestos" includes PACM, as defined below.

Asbestos abatement project means an asbestos project involving three square feet or three linear feet, or more, of asbestos-containing material.

Asbestos-containing material (ACM) means any material containing more than 1% asbestos.

Asbestos project includes the construction, demolition, repair, remodeling, maintenance or renovation of any public or private building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of material or outdoor activity releasing or likely to release asbestos fibers into the air.

Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas.

Building/facility/vessel owner means any legal entity or person who owns any public or private building, vessel, structure, facility, or mechanical system or the remnants thereof, including the agent of such person, but does not include individuals who work on asbestos projects in their own single-family residences, no part of which is used for commercial purposes. Also included is any lessee, who exercises control over management and record keeping functions relating to a building, vessel, and/or facility in which activities covered by this standard takes place.

Certified asbestos supervisor means an individual certified by the department under WAC 296-65-012.

Certified asbestos worker means an individual certified by the department under WAC 296-65-010.

Certified industrial hygienist (CIH) means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

Class I asbestos work means activities involving the removal of thermal system insulation or surfacing ACM/PACM.

Class II asbestos work means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and

sheeting, roofing and siding shingles, and construction mastics.

Class III asbestos work means repair and maintenance operations where "ACM," including TSI and surfacing ACM and PACM, may be disturbed.

Class IV asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Clean room means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Closely resemble means that the major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent person means, in addition to the definition in WAC 296-62-07728, one who is capable of identifying existing asbestos, hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them as specified in WAC 296-62-07728. The competent person shall be certified as an asbestos supervisor in compliance with WAC 296-65-030(3) and 296-65-012 for Class I and Class II work, and for Class III and Class IV work involving 3 square feet or 3 linear feet or more of asbestos-containing material. For Class III and Class IV work, involving less than 3 square feet or 3 linear feet, the competent person shall be trained in an operations and maintenance (O&M) course which meets the criteria of EPA (40 CFR 763.92(a)(2)).

Critical barrier means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

Decontamination area means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment contaminated with asbestos.

Demolition means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products. Where feasible, asbestos-containing materials shall be removed from all structures prior to the commencement of any demolition activity as per WAC 296-155-775(9).

Department means the department of labor and industries.

Director means the director of the department of labor and industries or his/her authorized representative.

Director of NIOSH means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Disturb or disturbance refers to activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of

ACM or PACM, no greater than the amount that can be contained in one standard size glove bag or waste bag in order to access a building or vessel component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

Employee exposure means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Equipment room (change room) means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber means a particulate form of asbestos, five micrometers or longer, with a length-to-diameter ratio of at least three to one.

Glove bag means not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers mean aerodynamic diameter or larger.

Homogeneous area means an area of surfacing material or thermal system insulation that is uniform in color and texture.

Industrial hygienist means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

Intact means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Friable ACM that is disturbed, as defined in this part, is presumed to be no longer intact.

Modification for the purpose of WAC 296-62-07712 means a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the stringency or strength of a material or component of the control system is not a "modification" for the purposes of WAC 296-62-07712.

Negative initial exposure assessment means a demonstration by the employer (which complies with the criteria in WAC 296-62-07709) that employee exposure during an operation is expected to be consistently below the PELs.

PACM means "presumed asbestos-containing material."

Presumed asbestos-containing material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980. The designation of a material as "PACM" may be rebutted pursuant to WAC 296-62-07721.

Project designer means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. 763.90(g).

Regulated area means an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris

and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or can reasonably be expected to exceed the permissible exposure limit. Requirements for regulated areas are set out in WAC 296-62-07711.

Removal means all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.

Renovation means the modifying of any existing vessel, vessel section, structure, or portion thereof.

Repair means overhauling, rebuilding, reconstructing, or reconditioning of vessels, vessel sections, structures or substrates, including encapsulation or other repair of ACM or PACM attached to vessels, vessel sections, structures or substrates.

Surfacing material means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Surfacing ACM means surfacing material which contains more than 1% asbestos.

Thermal system insulation (TSI) means ACM applied to pipes, fittings, boilers, breaching, tanks, ducts, or other structural components to prevent heat loss or gain.

Thermal system insulation ACM is thermal system insulation which contains more than 1% asbestos.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07703, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07703, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-07703, filed 10/10/89, effective 11/24/89; 89-11-035 (Order 89-03), § 296-62-07703, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07703, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07703, filed 4/27/87.]

WAC 296-62-07709 Exposure assessment and monitoring. (1) General monitoring criteria.

(a) Each employer who has a workplace or work operation where exposure monitoring is required under this part must perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed.

(b) Determinations of employee exposure must be made from breathing zone air samples that are representative of the eight-hour TWA and thirty minute short-term exposures of each employee.

(c) Representative eight-hour TWA employee exposures must be determined on the basis of one or more samples representing full-shift exposure for each shift for each employee in each job classification in each work area.

(d) Representative thirty minute short-term employee exposures must be determined on the basis of one or more samples representing thirty minute exposures associated with operations that are most likely to produce exposures above the excursion limit for each shift for each job classification in each work area.

(2) Exposure monitoring requirements for all occupational exposures to asbestos in all industries covered by the Washington Industrial Safety and Health Act except con-

struction work, as defined in WAC 296-155-012, and except ship repairing, shipbuilding and shipbreaking employments and related employments as defined in WAC 296-304-01001.

(a) Initial monitoring.

(i) Each employer who has a workplace or work operation covered by this standard, except as provided for in (a)(ii) and (iii) of this subsection, must perform initial monitoring of employees who are, or may reasonably be expected to be exposed to airborne concentrations at or above the TWA permissible exposure limit and/or excursion limit. The initial monitoring must be at the initiation of each asbestos job to accurately determine the airborne concentration of asbestos to which employees may be exposed.

(ii) Where the employer or his/her representative has monitored after March 31, 1992, for the TWA permissible exposure limit and/or excursion limit, and the monitoring satisfies all other requirements of this section, and the monitoring data was obtained during work operations conducted under workplace conditions closely resembling the processes, type of material including percentage of asbestos, control methods, work practices, and environmental conditions used and prevailing in the employer's current operations, the employer may rely on such earlier monitoring results to satisfy the requirements of (a)(i) of this subsection.

(iii) Where the employer has relied upon objective data that demonstrates that asbestos is not capable of being released in airborne concentrations at or above the TWA permissible exposure limit and/or excursion limit under those work conditions of processing, use, or handling expected to have the greatest potential for releasing asbestos, then no initial monitoring is required.

(b) Monitoring frequency (periodic monitoring) and patterns. After the initial determinations required by subsection (2)(a)(i) of this section, samples must be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. Sampling must not be at intervals greater than six months for employees whose exposures may reasonably be foreseen to exceed the TWA permissible exposure limit and/or excursion limit.

(c) Daily monitoring within regulated areas: The employer must conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area. Exception: When all employees within a regulated area are equipped with full facepiece supplied-air respirators operated in the pressure-demand mode equipped with either an auxiliary positive pressure self-contained breathing apparatus or a HEPA filter, the employer may dispense with the daily monitoring required by this subsection.

(d) Changes in monitoring frequency. If either the initial or the periodic monitoring required by subsection (2)(a) and (b) of this section statistically indicates that employee exposures are below the TWA permissible exposure limit and/or excursion limit, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

(e) Additional monitoring. Notwithstanding the provisions of subsection (2)(a)(ii) and (c) of this section, the employer must institute the exposure monitoring required under subsection (2)(a)(i) and (ii) of this section whenever

there has been a change in the production, process, control equipment, personnel, or work practices that may result in new or additional exposures above the TWA permissible exposure limit and/or excursion limit, or when the employer has any reason to suspect that a change may result in new or additional exposures above the TWA permissible exposure limit and/or excursion limit.

(3) Exposure assessment monitoring requirements for all construction work as defined in WAC 296-155-012 and for all ship repairing, shipbuilding and shipbreaking employments and related employments as defined in WAC 296-304-01001.

(a) Initial exposure assessment.

(i) Each employer who has a workplace or work operation covered by this standard must ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with the requirements which are triggered by exposure data or lack of a "negative exposure assessment," and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.

(ii) Basis of initial exposure assessment: Unless a negative exposure assessment has been made according to (b) of this subsection, the initial exposure assessment must, if feasible, be based on monitoring conducted according to (b) of this subsection. The assessment must take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the employer which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PELs, or otherwise makes a negative exposure assessment according to (b) of this subsection, the employer must presume that employees are exposed in excess of the TWA and excursion limit.

(b) Negative exposure assessment: For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, the employer may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria:

(i) Objective data demonstrating that the products or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or

(ii) Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data was obtained during work operations conducted under workplace conditions "closely resembling" the processes, type of material including percentage of asbestos, control methods, work practices, and environmental conditions used and prevailing in the employer's current opera-

tions, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA or excursion limit; or

(iii) The results of initial exposure monitoring of the current job made from breathing zone samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

(c) Periodic monitoring.

(i) Class I and Class II operations. The employer must conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area who is performing Class I or II work, unless the employer according to (b) of this subsection, has made a negative exposure assessment for the entire operation.

(ii) All operations under the standard other than Class I and II operations. The employer must conduct periodic monitoring of all work where exposures are expected to exceed a PEL, at intervals sufficient to document the validity of the exposure prediction.

(iii) Exception. When all employees required to be monitored daily are equipped with supplied-air respirators operated in the pressure demand mode, the employer may dispense with the daily monitoring required by subsection (2)(c) of this section. However, employees performing Class I work using a control method which is not listed in WAC 296-62-07712 or using a modification of a listed control method, must continue to be monitored daily even if they are equipped with supplied-air respirators.

(d) Termination of monitoring. If the periodic monitoring required by (c) of this subsection reveals that employee exposures, as indicated by statistically reliable measurements, are below the permissible exposure limit and excursion limit the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring.

(e) Monitoring outside negative-pressure enclosures: The employer must conduct representative area monitoring of the airborne fiber levels at least every other day at the HEPA machine exhaust and entrance to the decontamination area.

(f) Additional monitoring. Notwithstanding the provisions of (b), (c), and (d) of this subsection, the employer must institute the exposure monitoring required under (c) of this subsection whenever there has been a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the permissible exposure limit and/or excursion limit or when the employer has any reason to suspect that a change may result in new or additional exposures above the permissible exposure limit and/or excursion limit. Such additional monitoring is required regardless of whether a "negative exposure assessment" was previously produced for a specific job.

(g) Preabatement monitoring. Prior to the start of asbestos work, representative area air monitoring must be con-

ducted for comparison to clearance monitoring as required by WAC 296-62-07709 (3)(g). Preabatement air monitoring is not required for outdoor work (see WAC 296-62-07712 (5)(c)).

(h) Clearance monitoring. Representative area air monitoring must be taken at the completion of the asbestos work. Air sample results must be obtained before removal or reoccupancy of the regulated area. Clearance air monitoring is not required for outdoor asbestos work.

(4) Method of monitoring.

(a) All samples taken to satisfy the employee exposure monitoring requirements of this section must be personal samples collected following the procedures specified in WAC 296-62-07735, Appendix A.

(b) Monitoring must be performed by persons having a thorough understanding of monitoring principles and procedures and who can demonstrate proficiency in sampling techniques.

(c) All samples taken to satisfy the monitoring requirements of this section must be evaluated using the WISHA reference method specified in WAC 296-62-07735, Appendix A, or an equivalent counting method recognized by the department.

(d) If an equivalent method to the WISHA reference method is used, the employer must ensure that the method meets the following criteria:

(i) Replicate exposure data used to establish equivalency are collected in side-by-side field and laboratory comparisons; and

(ii) The comparison indicates that ninety percent of the samples collected in the range 0.5 to 2.0 times the permissible limit have an accuracy range of plus or minus twenty-five percent of the WISHA reference method results at a ninety-five percent confidence level as demonstrated by a statistically valid protocol; and

(iii) The equivalent method is documented and the results of the comparison testing are maintained.

(e) To satisfy the monitoring requirements of this section, employers must use the results of monitoring analysis performed by laboratories which have instituted quality assurance programs that include the elements as prescribed in WAC 296-62-07735, Appendix A.

(5) Employee notification of monitoring results.

(a) The employer must, as soon as possible but no later than within fifteen working days after the receipt of the results of any monitoring performed under the standard, notify the affected employees of these results in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(b) The written notification required by (a) of this subsection must contain the corrective action being taken by the employer to reduce employee exposure to or below the TWA and/or excursion exposure limits, wherever monitoring results indicated that the TWA and/or excursion exposure limits had been exceeded.

(6) Observation of monitoring.

(a) The employer must provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to asbestos conducted in accordance with this section.

(b) When observation of the monitoring of employee exposure to asbestos requires entry into an area where the use of protective clothing or equipment is required, the observer must be provided with and be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130, 99-17-026, § 296-62-07709, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060, 97-01-079, § 296-62-07709, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW, 89-11-035 (Order 89-03), § 296-62-07709, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07709, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040, 87-10-008 (Order 87-06), § 296-62-07709, filed 4/27/87.]

WAC 296-62-07712 Requirements for asbestos activities in construction and shipyard work. (1) Methods of compliance, the following engineering controls and work practices of this section must be used for construction work defined in WAC 296-155-012 and for all ship repair defined in WAC 296-304-010.

(2) Engineering controls and work practices for all operations covered by this section. The employer must use the following engineering controls and work practices in all operations covered by this section, regardless of the levels of exposure:

(a) Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM and PACM, except as provided in subsection (10)(b) of this section in the case of roofing material.

(b) Wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to, for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provided in subsection (10)(b) of this section.

(c) Asbestos must be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet saturated state to prevent the emission of airborne fibers unless the usefulness of the product would be diminished thereby.

(d) Prompt cleanup and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in this section apply.

(3) In addition to the requirements of subsection (2) of this section, the employer must use the following control methods to achieve compliance with the TWA permissible exposure limit and excursion limit prescribed by WAC 296-62-07705:

(a) Local exhaust ventilation equipped with HEPA filter dust collection systems;

(b) Enclosure or isolation of processes producing asbestos dust;

(c) Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;

(d) Use of other work practices and engineering controls that the department can show to be feasible;

(e) Wherever the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the permissible exposure limit and/or excursion limit prescribed in WAC 296-62-07705, the employer must use them to reduce employee exposure to the lowest levels attainable by these controls and must supplement them by the use of respiratory protection that complies with the requirements of WAC 296-62-07715.

(4) Prohibitions. The following work practices and engineering controls must not be used for work related to asbestos or for work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

(a) High-speed abrasive disc saws that are not equipped with point or cut ventilator or enclosures with HEPA filtered exhaust air;

(b) Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air;

(c) Dry sweeping, shoveling or other dry cleanup of dust and debris containing ACM and PACM;

(d) Employee rotation as a means of reducing employee exposure to asbestos.

(5) Cleanup.

(a) After completion of asbestos work (removal, demolition, and renovation operations), all surfaces in and around the work area must be cleared of any asbestos debris.

(b) Encapsulant must be applied to all areas where asbestos has been removed to ensure binding of any remaining fibers.

(6) Class I requirements. The following engineering controls and work practices and procedures must be used:

(a) All Class I work, including the installation and operation of the control system must be supervised by a competent person as defined in WAC 296-62-07703;

(b) For all Class I jobs involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material; for all other Class I jobs, where the employer cannot produce a negative exposure assessment according to WAC 296-62-07709(3), or where employees are working in areas adjacent to the regulated area, while the Class I work is being performed, the employer must use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

(i) Critical barriers must be placed over all the openings to the regulated area, except where activities are performed outdoors; or

(ii) The employer must use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpart E, of the EPA Asbestos in Schools Rule are met, or that perimeter area levels, measured by Phase Contrast Microscopy (PCM) are no more than background levels representing the same area before the asbestos work began. The results of such monitoring must be made known to the employer no later than 24 hours from the end of

the work shift represented by such monitoring. Exception: For work completed outdoors where employees are not working in areas adjacent to the regulated areas, (a) of this subsection is satisfied when the specific control methods in subsection (7) of this section are used;

(c) For all Class I jobs, HVAC systems must be isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent;

(d) For all Class I jobs, impermeable dropcloths shall be placed on surfaces beneath all removal activity;

(e) For all Class I jobs, all objects within the regulated area must be covered with impermeable dropcloths or plastic sheeting which is secured by duct tape or an equivalent;

(f) For all Class I jobs where the employer cannot produce a negative exposure assessment, or where exposure monitoring shows that a PEL is exceeded, the employer must ventilate the regulated area to move contaminated air away from the breathing zone of employees toward a HEPA filtration or collection device.

(7) Specific control methods for Class I work. In addition, Class I asbestos work must be performed using one or more of the following control methods according to the limitations stated below:

(a) Negative pressure enclosure (NPE) systems: NPE systems may be used where the configuration of the work area does not make the erection of the enclosure infeasible, with the following specifications and work practices:

(i) Specifications:

(A) The negative pressure enclosure (NPE) may be of any configuration;

(B) At least 4 air changes per hour must be maintained in the NPE;

(C) A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, must be maintained within the NPE as evidenced by manometric measurements;

(D) The NPE must be kept under negative pressure throughout the period of its use; and

(E) Air movement must be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or collection device.

(ii) Work practices:

(A) Before beginning work within the enclosure and at the beginning of each shift, the NPE must be inspected for breaches and smoke-tested for leaks, and any leaks sealed.

(B) Electrical circuits in the enclosure must be deactivated, unless equipped with ground-fault circuit interrupters.

(b) Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping and elbows and other connections with the following specifications and work practices:

(i) Specifications:

(A) Glove bags must be made of 6 mil thick plastic and must be seamless at the bottom.

(B) Glove bags used on elbows and other connections must be designed for that purpose and used without modifications.

(ii) Work practices:

(A) Each glove bag must be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.

(B) Glove bags must be smoke-tested for leaks and any leaks sealed prior to use.

(C) Glove bags may be used only once and may not be moved.

(D) Glove bags must not be used on surfaces whose temperature exceeds 150°F.

(E) Prior to disposal, glove bags must be collapsed by removing air within them using a HEPA vacuum.

(F) Before beginning the operation, loose and friable material adjacent to the glove bag/box operation must be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact.

(G) Where system uses attached waste bag, such bag must be connected to collection bag using hose or other material which must withstand pressure of ACM waste and water without losing its integrity.

(H) Sliding valve or other device must separate waste bag from hose to ensure no exposure when waste bag is disconnected.

(I) At least two persons must perform Class I glove bag removal operations.

(c) Negative pressure glove bag systems. Negative pressure glove bag systems may be used to remove ACM or PACM from piping.

(i) Specifications: In addition to specifications for glove bag systems above, negative pressure glove bag systems must attach HEPA vacuum systems or other devices to bag during removal.

(ii) Work practices:

(A) The employer must comply with the work practices for glove bag systems in this section.

(B) The HEPA vacuum cleaner or other device used during removal must run continually during the operation until it is completed at which time the bag must be collapsed prior to removal of the bag from the pipe.

(C) Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

(d) Negative pressure glove box systems: Negative pressure glove boxes may be used to remove ACM or PACM from pipe runs with the following specifications and work practices:

(i) Specifications:

(A) Glove boxes must be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal.

(B) A negative pressure generator must be used to create negative pressure in the system.

(C) An air filtration unit must be attached to the box.

(D) The box must be fitted with gloved apertures.

(E) An aperture at the base of the box must serve as a bagging outlet for waste ACM and water.

(F) A back-up generator must be present on site.

(G) Waste bags must consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mil.

(ii) Work practices:

(A) At least two persons must perform the removal.

(B) The box must be smoke-tested for leaks and any leaks sealed prior to each use.

(C) Loose or damaged ACM adjacent to the box must be wrapped and sealed in two layers of 6 mil plastic prior to the job, or otherwise made intact prior to the job.

(D) A HEPA filtration system must be used to maintain pressure barrier in box.

(e) Water spray process system. A water spray process system may be used for removal of ACM and PACM from cold line piping if, employees carrying out such process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. The system must meet the following specifications and shall be performed by employees using the following work practices:

(i) Specifications:

(A) Piping must be surrounded on 3 sides by rigid framing.

(B) A 360 degree water spray, delivered through nozzles supplied by a high pressure separate water line, must be formed around the piping.

(C) The spray must collide to form a fine aerosol which provides a liquid barrier between workers and the ACM and PACM.

(ii) Work practices:

(A) The system must be run for at least 10 minutes before removal begins.

(B) All removal must take place within the water barrier.

(C) The system must be operated by at least three persons, one of whom must not perform removal, but must check equipment, and ensure proper operation of the system.

(D) After removal, the ACM and PACM must be bagged while still inside the water barrier.

(f) A small walk-in enclosure which accommodates no more than two persons (mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices:

(i) Specifications:

(A) The fabricated or job-made enclosure must be constructed of 6 mil plastic or equivalent.

(B) The enclosure must be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit.

(C) Change room. A small change room made of 6-mil-thick polyethylene plastic should be contiguous to the mini-enclosure, and is necessary to allow the worker to vacuum off his/her protective coveralls and remove them before leaving the work area. While inside the enclosure, the worker should wear Tyvek disposable coveralls or equivalent and must use the appropriate HEPA-filtered dual cartridge respiratory protection. The advantages of mini-enclosures are that they limit the spread of asbestos contamination, reduce the potential exposure of bystanders and other workers who may be working in adjacent areas, and are quick and easy to install. The disadvantage of mini-enclosures is that they may be too small to contain the equipment necessary to create a negative-pressure within the enclosure; however, the double layer of plas-

tic sheeting will serve to restrict the release of asbestos fibers to the area outside the enclosure.

(ii) Work practices:

(A) Before use, the mini-enclosure must be inspected for leaks and smoke-tested to detect breaches, and any breaches sealed.

(B) Before reuse, the interior must be completely washed with amended water and HEPA-vacuumed.

(C) During use, air movement must be directed away from the employee's breathing zone within the mini-enclosure.

(8) Alternative control methods for Class I work. Class I work may be performed using a control method which is not referenced in subsection (2)(a) through (3)(e) of this section, or which modifies a control method referenced in subsection (2)(a) through (3)(e) of this section, if the following provisions are complied with:

(a) The control method shall enclose, contain or isolate the processes or source of airborne asbestos dust, before it enters the breathing zone of employees.

(b) A certified industrial hygienist or licensed professional engineer who is also qualified as a project designer as defined in WAC 296-62-07703, shall evaluate the work area, the projected work practices and the engineering controls and shall certify in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in subsection (6)(b)(ii) of this section. Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less, the evaluation required in subsection (8)(b) of this section may be performed by a competent person.

(c) Before work which involves the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material is begun using an alternative method which has been the subject of subsection (2)(a) through (3)(e) of this section required evaluation and certification, the employer shall send a copy of such evaluation and certification to the Department of Labor and Industries, Asbestos Certification Program, P.O. Box 44614, Olympia, Washington 98504-4614. The submission shall not constitute approval by WISHA.

(d) The evaluation of employee exposure required in WAC 296-62-07712(8) must include and be based on sampling and analytical data representing employee exposure during the use of such method under the worst-case conditions and by employees whose training and experiences are equivalent to employees who are to perform the current job.

(9) Work practices and engineering controls for Class II work.

(a) All Class II work must be supervised by a competent person as defined in WAC 296-62-07703.

(b) For all indoor Class II jobs, where the employer has not produced a negative exposure assessment according to WAC 296-62-07709(3), or where during the job, changed conditions indicate there may be exposure above the PEL or

where the employer does not remove the ACM in a substantially intact state, the employer must use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

(i) Critical barriers must be placed over all openings to the regulated area; or

(ii) The employer must use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring which meets the criteria set out in subsection (6)(b)(ii) of this section.

(c) Impermeable dropcloths must be placed on surfaces beneath all removal activity.

(d) All Class II asbestos work must be performed using the work practices and requirements set out above in subsection (2) of this section.

(10) Additional controls for Class II work. Class II asbestos work must also be performed by complying with the work practices and controls designated for each type of asbestos work to be performed, set out in this paragraph. Where more than one control method may be used for a type of asbestos work, the employer may choose one or a combination of designated control methods. Class II work also may be performed using a method allowed for Class I work, except that glove bags and glove boxes are allowed if they fully enclose the Class II material to be removed.

(a) For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, the employer has not verified the absence of ACM according to WAC 296-62-07712 (10)(a)(ix). The employer must ensure that employees comply with the following work practices and that employees are trained in these practices according to WAC 296-62-07722.

(i) Flooring or its backing must not be sanded.

(ii) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) must be used to clean floors.

(iii) Resilient sheeting must be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.

(iv) All scraping of residual adhesive and/or backing must be performed using wet methods.

(v) Dry sweeping is prohibited.

(vi) Mechanical chipping is prohibited unless performed in a negative pressure enclosure which meets the requirements of subsection (7)(a) of this section.

(vii) Tiles must be removed intact, unless the employer demonstrates that intact removal is not possible.

(viii) When tiles are heated and can be removed intact, wetting may be omitted.

(ix) Resilient flooring material including associated mastic and backing must be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.

(b) For removing roofing material which contains ACM the employer must ensure that the following work practices are followed:

(i) Roofing material must be removed in an intact state to the extent feasible.

(ii) Wet methods must be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.

(iii) Cutting machines must be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.

(iv) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation must be collected by a HEPA dust collector, or must be HEPA vacuumed by vacuuming along the cut line. When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation must be collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still wet dust and debris left along the cut line. The dust and debris must be immediately bagged or placed in covered containers.

(v) Asbestos-containing material that has been removed from a roof must not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it must be lowered to the ground via covered, dust-tight chute, crane or hoist:

(A) Any ACM that is not intact must be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While the material remains on the roof it must either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.

(B) Intact ACM must be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.

(vi) Upon being lowered, unwrapped material must be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

(vii) Roof level heating and ventilation air intake sources must be isolated or the ventilation system must be shut down.

(viii) Notwithstanding any other provision of this section, removal or repair of sections of intact roofing less than 25 square feet in area does not require use of wet methods or HEPA vacuuming as long as manual methods which do not render the material nonintact are used to remove the material and no visible dust is created by the removal method used. In determining whether a job involves less than 25 square feet, the employer must include all removal and repair work performed on the same roof on the same day.

(c) When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors (other than roofs, where subsection (10)(b) of this section applies) the employer must ensure that the following work practices are followed:

(i) Cutting, abrading or breaking siding, shingles, or transite panels, must be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release cannot be used.

(ii) Each panel or shingle must be sprayed with amended water prior to removal.

(iii) Unwrapped or unbagged panels or shingles must be immediately lowered to the ground via covered dust-tight

chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

(iv) Nails must be cut with flat, sharp instruments.

(d) When removing gaskets containing ACM, the employer must ensure that the following work practices are followed:

(i) If a gasket is visibly deteriorated and unlikely to be removed intact, removal must be undertaken within a glove bag as described in subsection (7)(b) of this section.

(ii) (Reserved.)

(iii) The gasket must be immediately placed in a disposal container.

(iv) Any scraping to remove residue must be performed wet.

(e) When performing any other Class II removal of asbestos-containing material for which specific controls have not been listed in subsection (10) of this section, the employer must ensure that the following work practices are complied with.

(i) The material must be thoroughly wetted with amended water prior to and during its removal.

(ii) The material must be removed in an intact state unless the employer demonstrates that intact removal is not possible.

(iii) Cutting, abrading or breaking the material must be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release are not feasible.

(iv) Asbestos-containing material removed, must be immediately bagged or wrapped, or kept wet until transferred to a closed receptacle, no later than the end of the work shift.

(f) Alternative work practices and controls. Instead of the work practices and controls listed in subsection (10) of this section, the employer may use different or modified engineering and work practice controls if the following provisions are complied with.

(i) The employer must demonstrate by data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used, that employee exposure will not exceed the PELs under any anticipated circumstances.

(ii) A competent person must evaluate the work area, the projected work practices and the engineering controls, and must certify in writing, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this standard. The evaluation must include and be based on data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and experience are equivalent to employees who are to perform the current job.

(11) Work practices and engineering controls for Class III asbestos work. Class III asbestos work must be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees.

(a) The work must be performed using wet methods.

(b) To the extent feasible, the work must be performed using local exhaust ventilation.

(c) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, braking, or sawing of thermal system insulation or surfacing material, the employer must use impermeable dropcloths, and must isolate the operation using mini-enclosures or glove bag systems according to subsection (7) of this section or another isolation method.

(d) Where the employer does not produce a "negative exposure assessment" for a job, or where monitoring results show the PEL has been exceeded, the employer must contain the area using impermeable dropcloths and plastic barriers or their equivalent, or must isolate the operation using a control system listed in and in compliance with subsection (7) of this section.

(e) Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where the employer does not produce a "negative exposure assessment" or where monitoring results show a PEL has been exceeded, must wear respirators which are selected, used and fitted according to provisions of WAC 296-62-07715.

(12) Class IV asbestos work. Class IV asbestos jobs must be conducted by employees trained according to the asbestos awareness training program set out in WAC 296-62-07722. In addition, all Class IV jobs must be conducted in conformity with the requirements set out in this section, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM and PACM.

(a) Employees cleaning up debris and waste in a regulated area where respirators are required must wear respirators which are selected, used and fitted according to provisions of WAC 296-62-07715.

(b) Employers of employees who clean up waste and debris in, and employers in control of, areas where friable thermal system insulation or surfacing material is accessible, must assume that such waste and debris contain asbestos.

(13) Alternative methods of compliance for installation, removal, repair, and maintenance of certain roofing and pipeline coating materials. Notwithstanding any other provision of this section, an employer who complies with all provisions of subsection (10)(a) and (b) of this section when installing, removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof flashings which contain asbestos fibers encapsulated or coated by bituminous or resinous compounds will be deemed to be in compliance with this section. If an employer does not comply with all provisions of this subsection (13), or if during the course of the job the material does not remain intact, the provisions of subsection (10) of this section apply instead of this subsection (13).

(a) Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate such hazards, must conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.

(b) All employees performing work covered by this subsection (13) must be trained in a training program that meets the requirements of WAC 296-62-07722.

(c) The material must not be sanded, abraded, or ground. When manual methods are used, materials must stay intact.

(d) Material that has been removed from a roof must not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it must be lowered to the ground via covered, dust-tight chute, crane or hoist. All such material must be removed from the roof as soon as is practicable, but in any event no later than the end of the work shift.

(e) Where roofing products which have been labeled as containing asbestos pursuant to WAC 296-62-07721, installed on nonresidential roofs during operations covered by this subsection (13), the employer must notify the building owner of the presence and location of such materials no later than the end of the job.

(f) All removal or disturbance of pipeline asphaltic wrap must be performed using wet methods.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07712, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-62-07712, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07712, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-07712, filed 10/10/89, effective 11/24/89; 89-11-035 (Order 89-03), § 296-62-07712, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07712, filed 11/30/87.]

WAC 296-62-07713 Methods of compliance for asbestos activities in general industry. (1) Engineering controls and work practices.

(a) The employer must institute engineering controls and work practices to reduce and maintain employee exposure to or below the permissible exposure limits prescribed in WAC 296-62-07705, except to the extent that such controls are not feasible. Engineering controls and work practices include but are not limited to the following:

(i) Local exhaust ventilation equipped with HEPA filter dust collection systems;

(ii) Vacuum cleaners equipped with HEPA filters;

(iii) Enclosure or isolation of processes producing asbestos dust;

(iv) Use of wet methods, wetting agents, or removal encapsulants to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup;

(v) Prompt disposal of wastes contaminated with asbestos in leak-tight containers; or

(vi) Use of work practices or other engineering controls that the director can show to be feasible.

(b) Wherever the feasible engineering controls and work practices that can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limits prescribed in WAC 296-62-07705, the employer must use them to reduce employee exposure to the lowest levels achievable by these controls and must supplement them by the use of respiratory protection that complies with the requirements of WAC 296-62-07715.

(c) For the following operations, wherever feasible engineering controls and work practices that can be instituted are not sufficient to reduce the employee exposure to or below

the permissible exposure limits prescribed in WAC 296-62-07705, the employer must use them to reduce employee exposure to or below 0.5 fiber per cubic centimeter of air (as an eight-hour time-weighted average) or 2.5 fibers per cubic centimeter of air for 30 minutes (short-term exposure), and must supplement them by the use of any combination of respiratory protection that complies with the requirements of WAC 296-62-07715, work practices and feasible engineering controls that will reduce employee exposure to or below the permissible exposure limits prescribed in WAC 296-62-07705: Coupling cutoff in primary asbestos cement pipe manufacturing; sanding in primary and secondary asbestos cement sheet manufacturing; grinding in primary and secondary friction product manufacturing; carding and spinning in dry textile processes; and grinding and sanding in primary plastics manufacturing.

(d) Local exhaust ventilation. Local exhaust HEPA ventilation and dust collection systems must be designed, constructed, installed, and maintained in accordance with good practices such as those found in the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1979.

(e) Particular tools. All hand-operated and power-operated tools which would produce or release fibers of asbestos so as to expose employees to levels in excess of the exposure limits prescribed in WAC 296-62-07705, such as, but not limited to, saws, scorers, abrasive wheels, and drills, must be provided with local exhaust ventilation systems which comply with (d) of this subsection. High-speed abrasive disc saws that are not equipped with appropriate engineering controls must not be used for work related to asbestos.

(f) Wet methods. Asbestos must be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet saturated state to prevent the emission of airborne fibers unless the usefulness of the product would be diminished thereby.

(g) Particular products and operations. When asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos is removed from bags, cartons, or other containers in which they are shipped, it must be either wetted, enclosed, or ventilated so as to prevent effectively the release of airborne fibers of asbestos.

(h) Compressed air. Compressed air must not be used to remove asbestos or materials containing asbestos unless the compressed air is used in conjunction with an enclosed ventilation system designed to effectively capture the dust cloud created by the compressed air.

(2) Clean-up.

(a) After completion of asbestos work, all surfaces in and around the work area must be cleared of asbestos debris.

(b) Encapsulant must be applied to all areas where asbestos has been removed to ensure binding of any remaining fibers.

(c) The employer must demonstrate by monitoring that the airborne fiber concentration is below:

- The permissible exposure limits; or
- At or below the airborne fiber level existing prior to the start of the asbestos work; whichever level is lower.

(3) Compliance program.

(a) Where either the time weighted average and/or excursion limit is exceeded, the employer must establish and implement a written program to reduce employee exposure to or below the permissible exposure limits by means of engineering and work practice controls as required by subsection (1) of this section, and by the use of respiratory protection where required or permitted under this section.

(b) Such programs must be reviewed and updated as necessary to reflect significant changes in the status of the employer's compliance program.

(c) Written programs must be submitted upon request for examination and copying to the director, affected employees and designated employee representatives.

(d) The employer must not use employee rotation as a means of compliance with the permissible exposure limits specified in WAC 296-62-07705.

(4) Specific compliance methods for brake and clutch repair:

(a) Engineering controls and work practices for brake and clutch repair and service. During automotive brake and clutch inspection, disassembly, repair and assembly operations, the employer must institute engineering controls and work practices to reduce employee exposure to materials containing asbestos using a negative pressure enclosure/HEPA vacuum system method or low pressure/wet cleaning method which meets the detailed requirements set out in Appendix F to this section. The employer may also comply using an equivalent method which follows written procedures which the employer demonstrates can achieve results equivalent to Method A in Appendix F to this section. For facilities in which no more than 5 pair of brakes or 5 clutches are inspected, disassembled, repaired, or assembled per week, the method set forth in Appendix F to this section may be used.

(b) The employer may also comply by using an equivalent method which follows written procedures, which the employer demonstrates can achieve equivalent exposure reductions as do the two "preferred methods." Such demonstration must include monitoring data conducted under workplace conditions closely resembling the process, type of asbestos containing materials, control method, work practices and environmental conditions which the equivalent method will be used, or objective data, which document that under all reasonably foreseeable conditions of brake and clutch repair applications, the method results in exposure which are equivalent to the methods set out in Appendix F to this section.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040, and 49.26.130. 99-17-026, § 296-62-07713, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07713, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-07713, filed 8/13/90, effective 9/24/90; 89-11-035 (Order 89-03), § 296-62-07713, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07713, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07713, filed 4/27/87.]

WAC 296-62-07715 Respiratory protection. (1) General. For employees who use respirators required by WAC 296-62-077 through 296-62-07747, the employer must pro-

vide respirators that comply with the requirements of this section. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations, such as maintenance and repair activities, for which engineering and work-practice controls are not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limits;

(d) Emergencies;

(e) Work operations in all regulated areas, except for construction activities which follow requirements set forth in WAC 296-62-07715 (1)(g);

(f) Work operations whenever employee exposure exceeds the permissible exposure limits;

(g) The following construction activities:

(i) Class I asbestos work;

(ii) Class II work where the ACM is not removed in a substantially intact state;

(iii) Class II and Class III work which is not performed using wet methods, except for removal of ACM from sloped roofs when a negative-exposure assessment has been made and the ACM is removed in an intact state;

(iv) Class II and Class III asbestos work for which a negative-exposure assessment has not been conducted;

(v) Class III work when TSI or surfacing ACM or PACM is being disturbed;

(vi) Class IV work performed within regulated areas where employees who are performing other work are required to wear respirators.

(2) Respirator program.

(a) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(b) The employer must provide a tight-fitting, powered, air-purifying respirator instead of any negative-pressure respirators specified in Table 1 of this section when an employee chooses to use this type of respirator and the respirator provides adequate protection to the employee.

(c) The employer must inform any employee required to wear a respirator under this section that the employee may require the employer to provide a tight-fitting, powered, air-purifying respirator instead of any negative-pressure respirator specified in Table 1 of this section.

(d) No employee must be assigned to tasks requiring the use of respirators if, based on their most recent medical examination, the examining physician determines that the employee will be unable to function normally using a respirator, or that the safety or health of the employee or other employees will be impaired by the use of a respirator. Such employees must be assigned to another job or given the opportunity to transfer to a different position, the duties of which they can perform. If such a transfer position is available, the position must be with the same employer, in the same geographical area, and with the same seniority, status, and rate of pay the employee had just prior to such transfer.

(3) Respirator selection.

(a) The employer must select and provide the appropriate respirator from Table 1 of this section, and ensure that the employee uses the respirator provided.

(b) The employer must provide a half-mask, air-purifying respirator, other than a disposable respirator, that is equipped with a high-efficiency filter when the employee performs:

(i) Class II and III asbestos work and the employer has not conducted a negative-exposure assessment;

(ii) Class III asbestos work when TSI or surfacing ACM or PACM is being disturbed.

TABLE 1—RESPIRATORY PROTECTION FOR ASBESTOS FIBERS

Airborne concentration of asbestos or conditions of use	Required respirator. (See Note a.)
Not in excess of 1 f/cc (10 X PEL), or otherwise as required independent of exposure	Half-mask air-purifying respirator other than a disposable respirator, equipped with high efficiency filters. (See Note b.)
Not in excess of 5 f/cc (50 X PEL)	Full facepiece air-purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100 X PEL)	Any powered air-purifying respirator equipped with high efficiency filters or any supplied-air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1,000 X PEL)	Full facepiece supplied-air respirator operated in pressure demand mode.
Greater than 100 f/cc (1,000 X PEL) or unknown concentration	Full facepiece supplied-air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus or HEPA filter egress cartridges.

Note:

- Respirators assigned for higher environmental concentrations may be used at lower concentrations.
- A high-efficiency filter means a filter that is capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers mean aerodynamic diameter or larger.

(4) Special respiratory protection requirements.

(a) Unless specifically identified in this subsection, respirator selection for asbestos removal, demolition, and renovation operations shall be in accordance with Table 1 of subsection (3) of this section. The employer shall provide and require to be worn, at no cost to the employee, a full facepiece supplied-air respirator operated in the pressure demand mode equipped with either an auxiliary positive pressure self-con-

tained breathing apparatus or a HEPA filter egress cartridge, to employees engaged in the following asbestos operations:

(i) Inside negative pressure enclosures used for removal, demolition, and renovation of friable asbestos from walls, ceilings, vessels, ventilation ducts, elevator shafts, and other structural members, but does not include pipes or piping systems; or

(ii) Any dry removal of asbestos.

(b) For all Class I work excluded or not specified in (a)(i) and (ii) of this subsection, when a negative-exposure assessment of the area has not been produced, and the exposure assessment of the area indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average, employers must provide the employees with one of the following respirators:

(i) A tight-fitting, powered, air-purifying respirator equipped with high-efficiency filters;

(ii) A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with HEPA egress cartridges; or

(iii) A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus. A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus must be provided under such conditions when the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

EXCEPTION: In lieu of the supplied-air respirator required by subsection (4) of this section, an employer may provide and require to be worn, at no cost to the employee, a full facepiece supplied-air respirator operated in the continuous flow mode equipped with either an auxiliary positive pressure self-contained breathing apparatus or a back-up HEPA filter egress cartridge where daily and historical personal monitoring data indicates the concentration of asbestos fibers is not reasonably expected to exceed 10 f/cc. The continuous flow respirator shall be operated at a minimum air flow rate of six cubic feet per minute at the facepiece using respirable air supplied as required by chapter 296-62 WAC, Part E.

(5) Respirator fit testing.

(a) For each employee wearing negative pressure respirators, employers shall perform either quantitative or qualitative face fit tests at the time of initial fitting and at least annually thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn.

(b) Any supplied-air respirator facepiece equipped with a back-up HEPA filter egress cartridge shall be quantitatively fit tested (see WAC 296-62-07160 through 296-62-07162 and 296-62-07201 through 296-62-07248).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07715, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07715, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07715, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07715, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-62-07715, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07715, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040, 87-10-008 (Order 87-06), § 296-62-07715, filed 4/27/87.]

WAC 296-62-07721 Communication of hazards to employees. (1) Communication of hazards to employees. General industry requirements.

(a) Introduction. This section applies to the communication of information concerning asbestos hazards in general industry. Asbestos exposure in industry occurs in a wide variety of industrial and commercial settings. Employees who manufacture asbestos-containing products may be exposed to asbestos fibers. Employees who repair and replace automotive brakes and clutches may be exposed to asbestos fibers. In addition, employees engaged in housekeeping activities in industrial facilities with asbestos product manufacturing operations, and in public and commercial buildings with installed asbestos-containing materials may be exposed to asbestos fibers. It should be noted that employees who perform housekeeping activities during and after construction activities are covered by asbestos construction work requirements in WAC 296-62-077. Housekeeping employees, regardless of industry designation, should know whether building components they maintain may expose them to asbestos. Building owners are often the only and/or best source of information concerning the presence of previously installed asbestos-containing building materials. Therefore they, along with employers of potentially exposed employees, are assigned specific information conveying and retention duties under this section.

(b) Installed asbestos-containing material. Employers and building owners are required to treat installed TSI and sprayed-on and troweled-on surfacing materials as ACM for the purposes of this standard. These materials are designated "presumed ACM or PACM," and are defined in WAC 296-62-07703. Asphalt and vinyl flooring installed no later than 1980 also must be treated as asbestos-containing. The employer or building owner may demonstrate that PACM and flooring materials do not contain asbestos by complying with WAC 296-62-07712 (10)(a)(ix).

(c) Duties of employers and building and facility owners.

(i) Building and facility owners must determine the presence, location, and quantity of ACM and/or PACM at the worksite. Employers and building and facility owners must exercise due diligence in complying with these requirements to inform employers and employees about the presence and location of ACM and PACM.

(ii) Before authorizing or allowing any construction, renovation, remodeling, maintenance, repair, or demolition project, an owner or owner's agent must perform, or cause to be performed, a good faith inspection to determine whether materials to be worked on or removed contain asbestos. The inspection must be documented by a written report maintained on file and made available upon request to the director.

(A) The good faith inspection must be conducted by an accredited inspector.

(B) Such good faith inspection is not required if the owner or owner's agent is reasonably certain that asbestos will not be disturbed by the project or the owner or owner's agent assumes that the suspect material contains asbestos and handles the material in accordance with WAC 296-62-07701 through 296-62-07753.

(iii) The owner or owner's agent must provide, to all contractors submitting a bid to undertake any construction, reno-

vation, remodeling, maintenance, repair, or demolition project, the written statement either of the reasonable certainty of nondisturbance of asbestos or of assumption of the presence of asbestos. Contractors must be provided with the written report before they apply or bid to work.

(iv) Any owner or owner's agent who fails to comply with (c)(ii) and (iii) of this subsection must be subject to a mandatory fine of not less than two hundred fifty dollars for each violation. Each day the violation continues must be considered a separate violation. In addition, any construction, renovation, remodeling, maintenance, repair, or demolition which was started without meeting the requirements of this section must be halted immediately and cannot be resumed before meeting such requirements.

(v) Building and facility owners must inform employers of employees, and employers must inform employees who will perform housekeeping activities in areas which contain ACM and/or PACM of the presence and location of ACM and/or PACM in such areas which may be contacted during such activities.

(vi) Upon written or oral request, building or facility owners must make a copy of the written report required in this section available to the department of labor and industries and the collective bargaining representatives or employee representatives of any employee who may be exposed to any asbestos or asbestos-containing materials. A copy of the written report must be posted conspicuously at the location where employees report to work.

(vii) Building and facility owners must maintain records of all information required to be provided according to this section and/or otherwise known to the building owner concerning the presence, location and quantity of ACM and PACM in the building/facility. Such records must be kept for the duration of ownership and must be transferred to successive owners.

(2) Communication of hazards to employees. Requirements for construction and shipyard employment activities.

(a) Introduction. This section applies to the communication of information concerning asbestos hazards in construction and shipyard employment activities. Most asbestos-related construction and shipyard activities involve previously installed building materials. Building/vessel owners often are the only and/or best sources of information concerning them. Therefore, they, along with employers of potentially exposed employees, are assigned specific information conveying and retention duties under this section. Installed Asbestos Containing Building/Vessel Material: Employers and building/vessel owners must identify TSI and sprayed or troweled on surfacing materials as asbestos-containing unless the employer, by complying with WAC 296-62-07721(3) determines it is not asbestos containing. Asphalt or vinyl flooring/decking material installed in buildings or vessels no later than 1980 must also be considered as asbestos containing unless the employer/owner, according to WAC 296-62-07712 (10)(a)(ix) determines it is not asbestos containing. If the employer or building/vessel owner has actual knowledge or should have known, through the exercise of due diligence, that materials other than TSI and sprayed-on or troweled-on surfacing materials are asbestos containing, they must be treated as such. When communicating information to

employees according to this standard, owners and employers must identify "PACM" as ACM. Additional requirements relating to communication of asbestos work on multi-employer worksites are set out in WAC 296-62-07706.

(b) Duties of building/vessel and facility owners.

(i) Before work subject to this section is begun, building/vessel and facility owners must identify the presence, location and quantity of ACM, and/or PACM at the worksite. All thermal system insulation and sprayed on or troweled on surfacing materials in buildings/vessels or substrates constructed no later than 1980 must be identified as PACM. In addition, resilient flooring/decking material installed no later than 1980 must also be identified as asbestos containing.

(ii) Before authorizing or allowing any construction, renovation, remodeling, maintenance, repair, or demolition project, a building/vessel and facility owner or owner's agent must perform, or cause to be performed, a good faith inspection to determine whether materials to be worked on or removed contain asbestos. The inspection must be documented by a written report maintained on file and made available upon request to the director.

(A) The good faith inspection must be conducted by an accredited inspector.

(B) Such good faith inspection is not required if the building/vessel and facility owner or owner's agent assumes that the suspect material contains asbestos and handles the material in accordance with WAC 296-62-07701 through 296-62-07753 or if the owner or the owner's agent is reasonably certain that asbestos will not be disturbed by the project.

(iii) The building/vessel and facility owner or owner's agent must provide, to all contractors submitting a bid to undertake any construction, renovation, remodeling, maintenance, repair, or demolition project, the written statement either of the reasonable certainty of nondisturbance of asbestos or of assumption of the presence of asbestos. Contractors must be provided the written report before they apply or bid on work.

(iv) Any building/vessel and facility owner or owners agent who fails to comply with WAC 296-62-07721 (2)(b)(ii) and (iii) must be subject to a mandatory fine of not less than two hundred fifty dollars for each violation. Each day the violation continues must be considered a separate violation. In addition, any construction, renovation, remodeling, maintenance, repair, or demolition which was started without meeting the requirements of this section must be halted immediately and cannot be resumed before meeting such requirements.

(v) Upon written or oral request, building/vessel and facility owner or owner's agent must make a copy of the written report required in this section available to the department of labor and industries and the collective bargaining representatives or employee representatives of any employee who may be exposed to any asbestos or asbestos-containing materials. A copy of the written report must be posted conspicuously at the location where employees report to work.

(vi) Building/vessel and facility owner or owner's agent must notify in writing the following persons of the presence, location and quantity of ACM or PACM, at worksites in their buildings/facilities/vessels.

(A) Prospective employers applying or bidding for work whose employees reasonably can be expected to work in or adjacent to areas containing such material;

(B) Employees of the owner who will work in or adjacent to areas containing such material;

(C) On multi-employer worksites, all employers of employees who will be performing work within or adjacent to areas containing such materials;

(D) Tenants who will occupy areas containing such materials.

(c) Duties of employers whose employees perform work subject to this standard in or adjacent to areas containing ACM and PACM. Building/vessel and facility owner or owner's agents whose employees perform such work must comply with these provisions to the extent applicable.

(i) Before work subject to this standard is begun, building/vessel and facility owner or owner's agents must determine the presence, location, and quantity of ACM and/or PACM at the worksite according to WAC 296-62-07721 (2)(b).

(ii) Before work under this standard is performed employers of employees who will perform such work must inform the following persons of the location and quantity of ACM and/or PACM present at the worksite and the precautions to be taken to insure that airborne asbestos is confined to the area.

(A) Owners of the building/vessel or facility;

(B) Employees who will perform such work and employers of employees who work and/or will be working in adjacent areas;

(iii) Upon written or oral request, a copy of the written report required in this section must be made available to the department of labor and industries and the collective bargaining representatives or employee representatives of any employee who may be exposed to any asbestos or asbestos-containing materials. A copy of the written report must be posted conspicuously at the location where employees report to work.

(iv) Within 10 days of the completion of such work, the employer whose employees have performed work subject to this standard, must inform the building/vessel or facility owner and employers of employees who will be working in the area of the current location and quantity of PACM and/or ACM remaining in the former regulated area and final monitoring results, if any.

(d) In addition to the above requirements, all employers who discover ACM and/or PACM on a worksite must convey information concerning the presence, location and quantity of such newly discovered ACM and/or PACM to the owner and to other employers of employees working at the worksite, within 24 hours of the discovery.

(e) No contractor may commence any construction, renovation, remodeling, maintenance, repair, or demolition project without receiving a copy of the written response or statement required by WAC 296-62-07721 (2)(b). Any contractor who begins any project without the copy of the written report or statement will be subject to a mandatory fine of not less than two hundred fifty dollars per day. Each day the violation continues will be considered a separate violation.

(3) Criteria to rebut the designation of installed material as PACM.

(a) At any time, an employer and/or building/vessel owner may demonstrate, for purposes of this standard, that PACM does not contain asbestos. Building/vessel owners and/or employers are not required to communicate information about the presence of building material for which such a demonstration according to the requirements of (b) of this subsection has been made. However, in all such cases, the information, data and analysis supporting the determination that PACM does not contain asbestos, must be retained according to WAC 296-62-07727.

(b) An employer or owner may demonstrate that PACM does not contain asbestos by the following:

(i) Having a completed inspection conducted according to the requirements of AHERA (40 CFR Part 763, Subpart E) which demonstrates that the material is not ACM;

(ii) Performing tests of the material containing PACM which demonstrate that no asbestos is present in the material. Such tests must include analysis of bulk samples collected in the manner described in 40 CFR 763.86, Asbestos-containing materials in schools. The tests, evaluation and sample collection must be conducted by an accredited inspector. Analysis of samples must be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA), or an equivalent nationally recognized Round Robin testing program.

(4) At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain TSI or surfacing ACM and PACM, the building/vessel and facility owner or owner's agent must post signs which identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. The employer shall ensure, to the extent feasible, that employees who come in contact with these signs can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

(5) Warning signs.

(a) Warning signs that demarcate the regulated area must be provided and displayed at each location where a regulated area is required. In addition, warning signs must be posted at all approaches to regulated areas and be posted at such a distance from such a location that an employee may read the signs and take necessary protective steps before entering the area marked by the signs.

(b) The warning signs required by (a) of this subsection must bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN
THIS AREA

(c) The employer shall ensure that employees working in and contiguous to regulated areas comprehend the warning signs required to be posted by (a) of this subsection. Means to ensure employee comprehension may include the use of foreign languages, pictographs, and graphics.

(6) Warning labels.

(a) Warning labels must be affixed to all products containing asbestos including raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, and to their containers including waste containers. Installed asbestos products must contain a visible label, except where such a label would clearly not be feasible.

(b) Labels must be printed in large, bold letters on a contrasting background.

(c) The labels must comply with the requirements of WAC 296-62-05411, and must include the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
AVOID BREATHING AIRBORNE ASBESTOS FIBERS

(7) The provisions for labels required by subsection (6)(a) of this section or for material safety data sheets required by subsection (8) of this section do not apply where:

(a) Asbestos fibers have been modified by a bonding agent, coating, binder, or other material, provided that the manufacturer can demonstrate that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of fibers of asbestos in excess of the excursion limit will be released; or

(b) Asbestos is present in a product in concentrations less than 1.0 percent by weight.

(8) Material safety data sheets. Employers who are manufacturers or importers of asbestos, or asbestos products must comply with the requirements regarding development of material safety data sheets as specified in WAC 296-62-05413, except as provided by subsection (7) of this section.

(9) When a building/vessel owner/or employer identifies previously installed PACM and/or ACM, labels or signs must be affixed or posted so that employees will be notified of what materials contain PACM and/or ACM. The employer must attach such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical rooms/areas. Signs required by subsection (5)(a) of this section may be posted in lieu of labels so long as they contain information required for labeling. The employer must ensure, to the extent feasible, that employees who come in contact with these signs can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07721, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-62-07721, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07721, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 93-01-

005 (Order 92-20), § 296-62-07721, filed 12/2/92, effective 1/15/93; 91-03-044 (Order 90-18), § 296-62-07721, filed 1/10/91, effective 2/12/91; 89-21-018 (Order 89-10), § 296-62-07721, filed 10/10/89, effective 11/24/89; 89-11-035 (Order 89-03), § 296-62-07721, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07721, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07721, filed 4/27/87.]

WAC 296-62-07722 Employee information and training. (1) Certification.

(a) Only certified asbestos workers may work on an asbestos project as required in WAC 296-65-010 and 296-65-030.

(b) Only certified asbestos supervisors may supervise asbestos abatement projects as required in WAC 296-65-012 and 296-65-030.

(c) In cases where certification requirements of chapter 296-65 WAC do not apply, all employees must be trained according to the provisions of this section regardless of their exposure levels.

(d) Certification is not required for asbestos work on materials containing less than one percent asbestos.

(2) Training must be provided prior to or at the time of initial assignment, unless the employee has received equivalent training within the previous twelve months, and at least annually thereafter.

(3) Asbestos projects.

(a) Class I and Class II work must be considered an asbestos project. Only certified asbestos workers may do this work.

(b) Only certified workers may conduct Class II asbestos work that is considered an asbestos project.

(i) The following Class II asbestos work must be considered asbestos projects:

(A) All Class II asbestos work where critical barriers, equivalent isolation methods, or negative pressure enclosures are required; or

(B) All Class II asbestos work where asbestos containing materials do not stay intact (including removal of vinyl asbestos floor (VAT) or roofing materials by mechanical methods such as chipping, grinding, or sanding).

(ii) The following Class II asbestos work is not considered an asbestos project and is excluded from asbestos worker certification:

(A) All Class II asbestos work involving intact asbestos containing materials (for example, intact roofing materials, bituminous or asphalt pipeline coatings, and intact flooring/decking materials);

(B) All Class II asbestos work of less than one square foot of asbestos containing materials; or

(C) All Class II asbestos work involving asbestos-cement water pipe when the work is done in accordance with training approved by the department through the asbestos certification program (see WAC 296-65-015(4)).

(iii) Asbestos work involving the removal of one square foot or more of intact roofing materials by mechanical sawing or heavy equipment must meet the following requirements:

(A) Only certified asbestos workers may conduct mechanical sawing of intact roofing material;

(B) Noncertified asbestos workers may handle roofing dust, material and debris;

(C) Operators of heavy equipment (such as track hoes with clam shells and excavators) do not need to be certified asbestos workers in the removal or demolition of intact roofing materials.

(c) Only certified asbestos workers may conduct all Class III and Class IV asbestos work that is considered an asbestos project.

(i) The following asbestos work is considered an asbestos project:

(A) All Class III asbestos work where one square foot or more of asbestos containing materials that do not stay intact;

(B) All Class IV asbestos work where one square foot or more of asbestos containing materials that do not stay intact; or

(C) All Class III and Class IV asbestos work with pipe insulation.

(ii) Except for a project involving pipe insulation work, any project involving only Class III or Class IV asbestos work with less than one square foot of asbestos containing materials is not considered an asbestos project.

(4) Training requirements for asbestos work that is not considered an asbestos project or is excluded from asbestos worker certification.

(a) Class II asbestos work.

(i) Employers must provide eight-hours of training to employees who perform asbestos work on one generic category of asbestos containing materials (ACM). When performing asbestos work in more than one category of asbestos containing materials, additional training must be used to supplement the first eight hour training course.

(ii) The training course must include:

- Hands-on training that applies to the category of asbestos containing materials,
- Specific work practices and engineering controls related to the category of asbestos containing materials present as specified in WAC 296-62-07712, and
- All the minimum elements of subsection (5) of this section.

(b) Class III asbestos work (maintenance and custodial work in buildings containing asbestos containing materials).

(i) Employers must provide training with curriculum and training methods equivalent to the 16-hour operations and maintenance course developed by the EPA. (See 40 CFR 763.92(a)(2).) For those employees whose only affected work is Class II work as described in subsection (4)(a)(i) of this section, employers must meet this 16-hour training requirement or provide training that meets the eight hours Class II requirements in subsection (4)(a) of this section.

(ii) Sixteen hours of training must include:

- Hands-on training in the use of respiratory protection and work practices, and
- All the minimum elements of subsection (5) of this section.

(c) Class IV asbestos work (maintenance and custodial work in buildings containing asbestos-containing materials).

(i) Employers must provide at least two hours of training with curriculum and training methods equivalent to the awareness training course developed by the EPA.

(ii) Training must include:

- Available information concerning the location of PACM, ACM, asbestos-containing flooring materials or flooring materials where the absence of asbestos has not been certified,
- Instruction on how to recognize damaged, deteriorated, and delimitation of asbestos containing building materials, and
- All of the minimum elements of subsection (5) of this section.

(5) The training program must be conducted in a manner which the employee is able to understand. The employer must ensure that each employee is informed of the following:

(a) The health effects associated with asbestos exposure;

(b) The relationship between smoking and exposure to asbestos producing lung cancer;

(c) Methods of recognizing asbestos and quantity, location, manner of use, release (including the requirements of WAC 296-62-07721 (1)(c) and (2)(b) to presume certain building materials contain asbestos), and storage of asbestos and the specific nature of operations which could result in exposure to asbestos;

(d) The engineering controls and work practices associated with the employee's job assignment;

(e) The specific procedures implemented to protect employees from exposure to asbestos, such as appropriate work practices, housekeeping procedures, hygiene facilities, decontamination procedures, emergency and clean-up procedures (including where Class III and IV work is performed, the contents "Managing Asbestos In Place" (EPA 20T-2003, July 1990) or its equivalent in content), personal protective equipment to be used, waste disposal procedures, and any necessary instructions in the use of these controls and procedures;

(f) The purpose, proper use, and limitations of protective clothing;

(g) The purpose and a description of the medical surveillance program required by WAC 296-62-07725;

(h) The content of this standard, including appendices;

(i) The names, addresses and phone numbers of public health organizations which provide information, materials, and/or conduct programs concerning smoking cessation. The employer may distribute the list of such organizations contained in Appendix I, to comply with this requirement;

(j) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels; and

(k) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by chapter 296-62 WAC, Part E (see WAC 296-62-07117, 296-62-07172, and 296-62-07186 through 296-62-07190).

(6) The employer must also provide, at no cost to employees who perform housekeeping operations in a facility which contains ACM or PACM, an asbestos awareness training course to all employees who are or will work in areas where ACM and/or PACM is present who work in buildings containing asbestos-containing materials, which must, at a minimum, contain the following elements:

- Health effects of asbestos,
- Locations of ACM and PACM in the building/facility,

- Recognition of ACM and PACM damage and deterioration,
- Requirements in this standard relating to house-keeping, and
- Proper response to fiber release episodes.

Each such employee must be so trained at least once a year.

(7) Access to information and training materials.

(a) The employer must make a copy of this standard and its appendices readily available without cost to all affected employees.

(b) The employer must provide, upon request, all materials relating to the employee information and training program to the director.

(c) The employer must inform all employees concerning the availability of self-help smoking cessation program material. Upon employee request, the employer must distribute such material, consisting of NIH Publication No. 89-1647, or equivalent self-help material, which is approved or published by a public health organization listed in Appendix I, WAC 296-62-07751.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07722, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07722, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07722, filed 12/17/96, effective 3/1/97.]

WAC 296-62-07728 Competent person. (1) General.

For all construction and shipyard work covered by this standard, the employer must designate a competent person, having the qualifications and authorities for ensuring worker safety and health as required by chapter 296-155 WAC.

(2) Required inspections by the competent person. WAC 296-155-110(9) which requires health and safety prevention programs to provide for frequent and regular inspections on the job sites, materials, and equipment to be made by the competent person, is incorporated.

(3) Additional inspections. In addition, the competent person must make frequent and regular inspections of the job sites in order to perform the duties set out below in this section. For Class I jobs, on-site inspections must be made at least once during each work shift, and at any time at employee request. For Class II and III jobs, on-site inspections must be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.

(4) On all worksites where employees are engaged in Class I or II asbestos work, the competent person designated in accordance with WAC 296-62-07712 must perform or supervise the following duties, as applicable:

(a) Set up the regulated area, enclosure, or other containment;

(b) Ensure (by on-site inspection) the integrity of the enclosure or containment;

(c) Set up procedures to control entry and exit from the enclosure and/or area;

(d) Supervise all employee exposure monitoring required by this section and ensure that it is conducted as required by WAC 296-62-07709;

(e) Ensure that employees working within the enclosure and/or using glovebags wear protective clothing and respirators as required by WAC 296-62-07715 and 296-62-07717;

(f) Ensure through on-site supervision, that employees set up and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements;

(g) Ensure that employees use the hygiene facilities and observe the decontamination procedures specified in WAC 296-62-07719;

(h) Ensure that through on-site inspection engineering controls are functioning properly and employees are using proper work practices; and

(i) Ensure that notification requirements in WAC 296-62-07721 are met.

(5) Training for competent person.

(a) For Class I and II asbestos work the competent person must be trained in all aspects of asbestos removal and handling, including:

- Abatement,
- Installation,
- Removal and handling,
- The contents of this standard,
- The identification of asbestos,
- Removal procedures where appropriate, and
- Other practices for reducing the hazard.

Such training must be the certified asbestos supervisor training specified in WAC 296-65-003, 296-65-012, and 296-65-030.

(b) For Class III and IV asbestos work:

(i) The competent person must be certified as an asbestos supervisor as prescribed in WAC 296-65-012 and 296-65-030 for Class III and IV work involving an asbestos project of 3 square feet or 3 linear feet or more of asbestos containing material.

(ii) For Class III and IV asbestos work involving less than 3 square feet or 3 linear feet of asbestos containing material, the competent person must be trained in:

- Aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures,
- Practices for reducing asbestos exposures,
- Use of wet methods,
- The contents of this standard, and
- The identification of asbestos.

Such training must include successful completion of a course equivalent in curriculum and training method to the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers (see 40 CFR 763.92 (a)(2)) or its equivalent in stringency, content and length.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040, and 49.26.130. 99-17-026, § 296-62-07728, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07728, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07728, filed 12/17/96, effective 3/1/97.]

WAC 296-62-07733 Appendices. (1) Appendices A, D, E, and F to this part are incorporated as part of this section and the contents of these appendices are mandatory.

(2) Appendices B, G, H, I, J and K to this part are informational and are not intended to create any additional obliga-

tions not otherwise imposed or to detract from any existing obligations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07733, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07733, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07733, filed 1/10/91, effective 2/12/91; 87-24-051 (Order 87-24), § 296-62-07733, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07733, filed 4/27/87.]

WAC 296-62-07735 Appendix A—WISHA reference method—Mandatory. This mandatory appendix specifies the procedure for analyzing air samples for asbestos, tremolite, anthophyllite, and actinolite and specifies quality control procedures that must be implemented by laboratories performing the analysis. The sampling and analytical methods described below represent the elements of the available monitoring methods (such as Appendix B to this section, the most current version of the WISHA method ID-60, or the most current version of the NIOSH 7400 method) which WISHA considers to be essential to achieve adequate employee exposure monitoring while allowing employers to use methods that are already established within their organizations. All employers who are required to conduct air monitoring under WAC 296-62-07709 are required to utilize analytical laboratories that use this procedure, or an equivalent method, for collecting and analyzing samples.

(1) Sampling and analytical procedure.

(a) The sampling medium for air samples must be mixed cellulose ester filter membranes. These must be designated by the manufacturer as suitable for asbestos, tremolite, anthophyllite, and actinolite counting. See below for rejection of blanks.

(b) The preferred collection device is the 25-mm diameter cassette with an open-faced 50-mm electrically conductive extension cowl. The 37-mm cassette may be used if necessary but only if written justification for the need to use the 37-mm filter cassette accompanies the sample results in the employee's exposure monitoring record. Do not reuse or reload cassettes for asbestos sample collection.

(c) An air flow rate between 0.5 liter/min and 4.0 liters/min must be selected for the 25-mm cassette. If the 37-mm cassette is used, an air flow rate between 1 liter/min and 4.0 liters/min must be selected.

(d) Where possible, a sufficient air volume for each air sample must be collected to yield between one hundred and one thousand three hundred fibers per square millimeter on the membrane filter. If a filter darkens in appearance or if loose dust is seen on the filter, a second sample must be started.

(e) Ship the samples in a rigid container with sufficient packing material to prevent dislodging the collected fibers. Packing material that has a high electrostatic charge on its surface (e.g., expanded polystyrene) cannot be used because such material can cause loss of fibers to the sides of the cassette.

(f) Calibrate each personal sampling pump before and after use with a representative filter cassette installed between the pump and the calibration devices.

(g) Personal samples must be taken in the "breathing zone" of the employee (i.e., attached to or near the collar or lapel near the worker's face).

(h) Fiber counts must be made by positive phase contrast using a microscope with an 8 to 10 X eyepiece and a 40 to 45 X objective for a total magnification of approximately 400 X and a numerical aperture of 0.65 to 0.75. The microscope shall also be fitted with a green or blue filter.

(i) The microscope must be fitted with a Walton-Beckett eyepiece graticule calibrated for a field diameter of one hundred micrometers (+/-2 micrometers).

(j) The phase-shift detection limit of the microscope must be about 3 degrees measured using the HSE phase shift test slide as outlined below.

(i) Place the test slide on the microscope stage and center it under the phase objective.

(ii) Bring the blocks of grooved lines into focus.

Note: The slide consists of seven sets of grooved lines (ca. 20 grooves to each block) in descending order of visibility from sets one to seven, seven being the least visible. The requirements for asbestos, tremolite, anthophyllite, and actinolite counting are that the microscope optics must resolve the grooved lines in set three completely, although they may appear somewhat faint, and that the grooved lines in sets six and seven must be invisible. Sets four and five must be at least partially visible but may vary slightly in visibility between microscopes. A microscope that fails to meet these requirements has either too low or too high a resolution to be used for asbestos, tremolite, anthophyllite, and actinolite counting.

(iii) If the image deteriorates, clean and adjust the microscope optics. If the problem persists, consult the microscope manufacturer.

(k) Each set of samples taken will include ten percent blanks or a minimum of two blanks. These blanks must come from the same lot as the filters used for sample collection. The field blank results must be averaged and subtracted from the analytical results before reporting. Any samples represented by a blank having a fiber count in excess of the detection limit of the method being used must be rejected.

(l) The samples must be mounted by the acetone/triacetin method or a method with an equivalent index of refraction and similar clarity.

(m) Observe the following counting rules.

(i) Count only fibers equal to or longer than five micrometers. Measure the length of curved fibers along the curve.

(ii) Count all particles as asbestos, tremolite, anthophyllite, and actinolite that have a length-to-width ratio (aspect ratio) of three to one or greater.

(iii) Fibers lying entirely within the boundary of the Walton-Beckett graticule field must receive a count of one. Fibers crossing the boundary once, having one end within the circle, must receive the count of one-half. Do not count any fiber that crosses the graticule boundary more than once. Reject and do not count any other fibers even though they may be visible outside the graticule area.

(iv) Count bundles of fibers as one fiber unless individual fibers can be identified by observing both ends of an individual fiber.

(v) Count enough graticule fields to yield 100 fibers. Count a minimum of 20 fields; stop counting at 100 fields regardless of fiber count.

(n) Blind recounts must be conducted at the rate of ten percent.

(2) Quality control procedures.

(a) Intralaboratory program. Each laboratory and/or each company with more than one microscopist counting slides must establish a statistically designed quality assurance program involving blind recounts and comparisons between microscopists to monitor the variability of counting by each microscopist and between microscopists. In a company with more than one laboratory, the program must include all laboratories and must also evaluate the laboratory-to-laboratory variability.

(b) Interlaboratory program.

(i) Each laboratory analyzing asbestos, tremolite, anthophyllite, and actinolite samples for compliance determination shall implement an interlaboratory quality assurance program that as a minimum includes participation of at least two other independent laboratories. Each laboratory must participate in round robin testing at least once every six months with at least all the other laboratories in its interlaboratory quality assurance group. Each laboratory must submit slides typical of its own work load for use in this program. The round robin shall be designed and results analyzed using appropriate statistical methodology.

(ii) All laboratories should participate in a national sample testing scheme such as the Proficiency Analytical Testing Program (PAT), the Asbestos Registry sponsored by the American Industrial Hygiene Association (AIHA).

(c) All individuals performing asbestos, tremolite, anthophyllite, and actinolite analysis must have taken the NIOSH course for sampling and evaluating airborne asbestos, tremolite, anthophyllite, and actinolite dust or an equivalent course, recognized by the department.

(d) When the use of different microscopes contributes to differences between counters and laboratories, the effect of the different microscope must be evaluated and the microscope must be replaced, as necessary.

(e) Current results of these quality assurance programs must be posted in each laboratory to keep the microscopists informed.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07735, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07735, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07735, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07735, filed 4/27/87.]

WAC 296-62-07737 Appendix B—Detailed procedure for asbestos sampling and analysis—Nonmandatory.

Air

Matrix:

WISHA Permissible Exposure Limits:

Time Weighted Average	0.1 fiber/cc
Excursion Level (30 minutes)	1.0 fiber/cc

Collection Procedure:

A known volume of air is drawn through a 25-mm diameter cassette containing a mixed-cellulose ester filter. The cassette must be equipped with an electrically conductive 50-mm extension cowl. The sampling time and rate are chosen to give a fiber density of between 100 to 1,300 fibers/mm² on the filter.

Recommended Sampling Rate 0.5 to 4.0 liters/minute (L/min)

Recommended Air Volumes:

Minimum	25 L
Maximum	2,400 L

Analytical Procedure: A portion of the sample filter is cleared and prepared for asbestos fiber counting by Phase Contrast Microscopy (PCM) at 400X. Commercial manufacturers and products mentioned in this method are for descriptive use only and do not constitute endorsements by WISHA. Similar products from other sources can be substituted.

Introduction.

This method describes the collection of airborne asbestos fibers using calibrated sampling pumps with mixed-cellulose ester (MCE) filters and analysis by phase contrast microscopy (PCM). Some terms used are unique to this method and are defined below:

Asbestos: A term for naturally occurring fibrous minerals. Asbestos includes chrysotile, crocidolite, amosite (cummingtonite-grunerite asbestos), tremolite asbestos, actinolite asbestos, anthophyllite asbestos, and any of these minerals that have been chemically treated and/or altered. The precise chemical formulation of each species will vary with the location from which it was mined. Nominal compositions are listed:

Chrysotile	$Mg_3Si_2O_5(OH)_4$
Crocidolite	$Na_2Fe_3^{2+}Fe_2^{3+}Si_8O_{22}(OH)_2$
Amosite	$(Mg,Fe)_7Si_8O_{22}(OH)_2$
Tremolite-actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Anthophyllite	$(Mg,Fe)_7Si_8O_{22}(OH)_2$

Asbestos Fiber: A fiber of asbestos which meets the criteria specified below for a fiber.

Aspect Ratio: The ratio of the length of a fiber to its diameter (e.g. 3:1, 5:1 aspect ratios).

Cleavage Fragments: Mineral particles formed by comminution of minerals, especially those characterized by parallel sides and a moderate aspect ratio (usually less than 20:1).

Detection Limit: The number of fibers necessary to be 95% certain that the result is greater than zero.

Differential Counting: The term applied to the practice of excluding certain kinds of fibers from the fiber count because they do not appear to be asbestos.

Fiber: A particle that is 5 µm or longer, with a length-to-width ratio of 3 to 1 or longer.

Field: The area within the graticule circle that is superimposed on the microscope image.

Set: The samples which are taken, submitted to the laboratory, analyzed, and for which, interim or final result reports are generated.

Tremolite, Anthophyllite, and Actinolite: The non-asbestos form of these minerals which meet the definition of a fiber. It includes any of these minerals that have been chemically treated and/or altered.

Walton-Beckett Graticule: An eyepiece graticule specifically designed for asbestos fiber counting. It consists of a circle with a projected diameter of $100 \pm 2 \mu\text{m}$ (area of about 0.00785 mm^2) with a crosshair having tic-marks at $3\text{-}\mu\text{m}$ intervals in one direction and $5\text{-}\mu\text{m}$ in the orthogonal direction. There are marks around the periphery of the circle to demonstrate the proper sizes and shapes of fibers. The disk is placed in one of the microscope eyepieces so that the design is superimposed on the field of view.

1. History.

(a) Early surveys to determine asbestos exposures were conducted using impinger counts of total dust with the counts expressed as million particles per cubic foot. The British Asbestos Research Council recommended filter membrane counting in 1969. In July 1969, the Bureau of Occupational Safety and Health published a filter membrane method for counting asbestos fibers in the United States. This method was refined by NIOSH and published as P & CAM 239. On May 29, 1971, OSHA specified filter membrane sampling with phase contrast counting for evaluation of asbestos exposures at worksites in the United States. The use of this technique was again required by OSHA in 1986. Phase contrast microscopy has continued to be the method of choice for the measurement of occupational exposure to asbestos.

(b) Principle. Air is drawn through a MCE filter to capture airborne asbestos fibers. A wedge shaped portion of the filter is removed, placed on a glass microscope slide and made transparent. A measured area (field) is viewed by PCM. All the fibers meeting a defined criteria for asbestos are counted and considered a measure of the airborne asbestos concentration.

(c) Advantages and Disadvantages

(i) There are four main advantages of PCM over other methods:

(A) The technique is specific for fibers. Phase contrast is a fiber counting technique which excludes non-fibrous particles from the analysis.

(B) The technique is inexpensive and does not require specialized knowledge to carry out the analysis for total fiber counts.

(C) The analysis is quick and can be performed on-site for rapid determination of air concentrations of asbestos fibers.

(D) The technique has continuity with historical epidemiological studies so that estimates of expected disease can be inferred from long-term determinations of asbestos exposures.

(ii) The main disadvantage of PCM is that it does not positively identify asbestos fibers. Other fibers which are not asbestos may be included in the count unless differential counting is performed. This requires a great deal of experience to adequately differentiate asbestos from non-asbestos fibers. Positive identification of asbestos must be performed by polarized light or electron microscopy techniques. A fur-

ther disadvantage of PCM is that the smallest visible fibers are about $0.2 \mu\text{m}$ in diameter while the finest asbestos fibers may be as small as $0.02 \mu\text{m}$ in diameter. For some exposures, substantially more fibers may be present than are actually counted.

(d) Workplace Exposure. Asbestos is used by the construction industry in such products as shingles, floor tiles, asbestos cement, roofing felts, insulation and acoustical products. Non-construction uses include brakes, clutch facings, paper, paints, plastics, and fabrics. One of the most significant exposures in the workplace is the removal and encapsulation of asbestos in schools, public buildings, and homes. Many workers have the potential to be exposed to asbestos during these operations. About 95% of the asbestos in commercial use in the United States is chrysotile. Crocidolite and amosite make up most of the remainder. Anthophyllite and tremolite or actinolite are likely to be encountered as contaminants in various industrial products.

(e) Physical Properties. Asbestos fiber possesses a high tensile strength along its axis, is chemically inert, non-combustible, and heat resistant. It has a high electrical resistance and good sound absorbing properties. It can be weaved into cables, fabrics or other textiles, and also matted into asbestos papers, felts, or mats.

2. Range and Detection Limit.

(a) The ideal counting range on the filter is 100 to 1,300 fibers/mm². With a Walton-Beckett graticule this range is equivalent to 0.8 to 10 fibers/field. Using NIOSH counting statistics, a count of 0.8 fibers/field would give an approximate coefficient of variation (CV) of 0.13.

(b) The detection limit for this method is 4.0 fibers per 100 fields or 5.5 fibers/mm². This was determined using an equation to estimate the maximum CV possible at a specific concentration (95% confidence) and a Lower Control Limit of zero. The CV value was then used to determine a corresponding concentration from historical CV vs fiber relationships. As an example:

$$\text{Lower Control Limit (95\% Confidence)} = AC - 1.645(CV)(AC)$$

Where:

$$\begin{aligned} AC &= \text{Estimate of the airborne fiber concentration} \\ &\quad \text{(fibers/cc) Setting the Lower Control Limit} \\ &= 0 \text{ and solving for CV:} \\ 0 &= AC - 1.645(CV)(AC) \\ CV &= 0.61 \end{aligned}$$

This value was compared with CV vs. count curves. The count at which $CV = 0.61$ for Leidel-Busch counting statistics 8(i) or for an OSHA Salt Lake Technical Center (OSHA-SLTC) CV curve (see Appendix A for further information) was 4.4 fibers or 3.9 fibers per 100 fields, respectively. Although a lower detection limit of 4 fibers per 100 fields is supported by the OSHA-SLTC data, both data sets support the 4.5 fibers per 100 fields value.

3. Method Performance—Precision and Accuracy. Precision is dependent upon the total number of fibers counted and the uniformity of the fiber distribution on the filter. A general rule is to count at least 20 and not more than 100 fields. The

count is discontinued when 100 fibers are counted, provided that 20 fields have already been counted. Counting more than 100 fibers results in only a small gain in precision. As the total count drops below 10 fibers, an accelerated loss of precision is noted. At this time, there is no known method to determine the absolute accuracy of the asbestos analysis. Results of samples prepared through the Proficiency Analytical Testing (PAT) Program and analyzed by the OSHA-SLTC showed no significant bias when compared to PAT reference values. The PAT samples were analyzed from 1987 to 1989 (N=36) and the concentration range was from 120 to 1,300 fibers/mm².

4. Interferences. Fibrous substances, if present, may interfere with asbestos analysis. Some common fibers are:

Fiber glass	Perlite veins.
Anhydrite plant fibers gypsum	Some synthetic fibers.
Membrane structures	Sponge spicules and diatoms.
Microorganisms	Wollastonite.

The use of electron microscopy or optical tests such as polarized light, and dispersion staining may be used to differentiate these materials from asbestos when necessary.

5. Sampling.

(a) Equipment.

(i) Sample assembly. Conductive filter holder consisting of a 25-mm diameter, 3-piece cassette having a 50-mm long electrically conductive extension cowl. Backup pad, 25-mm, cellulose. Membrane filter, mixed-cellulose ester (MCE), 25-mm, plain, white, 0.8-to 1.2- μ m pore size.

Notes: (A) DO NOT RE-USE CASSETTES.

(B) Fully conductive cassettes are required to reduce fiber loss to the sides of the cassette due to electrostatic attraction.

(C) Purchase filters which have been selected by the manufacturer for asbestos counting or analyze representative filters for fiber background before use. Discard the filter lot if more than 5 fibers/100 fields are found.

(D) To decrease the possibility of contamination, the sampling system (filter-backup pad-cassette) for asbestos is usually preassembled by the manufacturer.

(ii) Gel bands for sealing cassettes.

(iii) Sampling pump. Each pump must be a battery operated, self-contained unit small enough to be placed on the monitored employee and not interfere with the work being performed. The pump must be capable of sampling at 2.5 liters per minute (L/min) for the required sampling time.

(iv) Flexible tubing, 6-mm bore.

(v) Pump calibration. Stopwatch and bubble tube/burette or electronic meter.

(b) Sampling Procedure.

(i) Seal the point where the base and cowl of each cassette meet with a gel band or tape.

(ii) Charge the pumps completely before beginning.

(iii) Connect each pump to a calibration cassette with an appropriate length of 6-mm bore plastic tubing. Do not use

luer connectors—the type of cassette specified above has built-in adapters.

(iv) Select an appropriate flow rate for the situation being monitored. The sampling flow rate must be between 0.5 and 4.0 L/min for personal sampling and is commonly set between 1 and 2 L/min. Always choose a flow rate that will not produce overloaded filters.

(v) Calibrate each sampling pump before and after sampling with a calibration cassette in-line (Note: This calibration cassette should be from the same lot of cassettes used for sampling). Use a primary standard (e.g. bubble burette) to calibrate each pump. If possible, calibrate at the sampling site.

Note: If sampling site calibration is not possible, environmental influences may affect the flow rate. The extent is dependent on the type of pump used. Consult with the pump manufacturer to determine dependence on environmental influences. If the pump is affected by temperature and pressure changes, use the formula in subsection (10) of this section to calculate the actual flow rate.

(vi) Connect each pump to the base of each sampling cassette with flexible tubing. Remove the end cap of each cassette and take each air sample open face. Assure that each sample cassette is held open side down in the employee's breathing zone during sampling. The distance from the nose/mouth of the employee to the cassette should be about 10 cm. Secure the cassette on the collar or lapel of the employee using spring clips or other similar devices.

(vii) A suggested minimum air volume when sampling to determine TWA compliance is 25 L. For Excursion Limit (30 min sampling time) evaluations, a minimum air volume of 48 L is recommended.

(viii) The most significant problem when sampling for asbestos is overloading the filter with non-asbestos dust. Suggested maximum air sample volumes for specific environments are:

Environment	Air Vol. (L)
Asbestos removal operations (visible dust)	100
Asbestos removal operations (little dust)	240
Office environments	400 to 2,400

Caution: Do not overload the filter with dust. High levels of non-fibrous dust particles may obscure fibers on the filter and lower the count or make counting impossible. If more than about 25 to 30% of the field area is obscured with dust, the result may be biased low. Smaller air volumes may be necessary when there is excessive non-asbestos dust in the air. While sampling, observe the filter with a small flashlight. If there is a visible layer of dust on the filter, stop sampling, remove and seal the cassette, and replace with a new sampling assembly. The total dust loading should not exceed 1 mg.

(ix) Blank samples are used to determine if any contamination has occurred during sample handling. Prepare two blanks for the first 1 to 20 samples. For sets containing greater than 20 samples, prepare blanks as 10% of the samples. Handle blank samples in the same manner as air samples with one exception: Do not draw any air through the blank samples. Open the blank cassette in the place where the sample cassettes are mounted on the employee. Hold it open

for about 30 seconds. Close and seal the cassette appropriately. Store blanks for shipment with the sample cassettes.

(x) Immediately after sampling, close and seal each cassette with the base and plastic plugs. Do not touch or puncture the filter membrane as this will invalidate the analysis.

(xi) Attach a seal (OSHA-21 or equivalent) around each cassette in such a way as to secure the end cap plug and base plug. Tape the ends of the seal together since the seal is not long enough to be wrapped end-to-end. Also wrap tape around the cassette at each joint to keep the seal secure.

(c) Sample Shipment.

(i) Send the samples to the laboratory with paperwork requesting asbestos analysis. List any known fibrous interferences present during sampling on the paperwork. Also, note the workplace operation(s) sampled.

(ii) Secure and handle the samples in such that they will not rattle during shipment nor be exposed to static electricity. Do not ship samples in expanded polystyrene peanuts, vermiculite, paper shreds, or excelsior. Tape sample cassettes to sheet bubbles and place in a container that will cushion the samples without rattling.

(iii) To avoid the possibility of sample contamination, always ship bulk samples in separate mailing containers.

6. Analysis.

(a) Safety Precautions.

(i) Acetone is extremely flammable and precautions must be taken not to ignite it. Avoid using large containers or quantities of acetone. Transfer the solvent in a ventilated laboratory hood. Do not use acetone near any open flame. For generation of acetone vapor, use a spark free heat source.

(ii) Any asbestos spills should be cleaned up immediately to prevent dispersal of fibers. Prudence should be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills should be cleaned up with wet methods and/or a High Efficiency Particulate-Air (HEPA) filtered vacuum.

Caution: Do not use a vacuum without a HEPA filter—It will disperse fine asbestos fibers in the air.

(b) Equipment.

(i) Phase contrast microscope with binocular or trinocular head.

(ii) Widefield or Huygenian 10X eyepieces (NOTE: The eyepiece containing the graticule must be a focusing eyepiece. Use a 40X phase objective with a numerical aperture of 0.65 to 0.75).

(iii) Kohler illumination (if possible) with green or blue filter.

(iv) Walton-Beckett Graticule, type G-22 with 100 ± 2 μm projected diameter.

(v) Mechanical stage. A rotating mechanical stage is convenient for use with polarized light.

(vi) Phase telescope.

(vii) Stage micrometer with 0.01-mm subdivisions.

(viii) Phase-shift test slide, mark II (Available from PTR optics Ltd., and also McCrone).

(ix) Precleaned glass slides, 25 mm X 75 mm. One end can be frosted for convenience in writing sample numbers, etc., or paste-on labels can be used.

(x) Cover glass #1-1/2.

(xi) Scalpel (#10, curved blade).

(xii) Fine tipped forceps.

(xiii) Aluminum block for clearing filter.

(xiv) Automatic adjustable pipette, 100-to 500- μL .

(xv) Micropipette, 5 μL .

(c) Reagents.

(i) Acetone (HPLC grade).

(ii) Triacetin (glycerol triacetate).

(iii) Lacquer or nail polish.

(d) Standard Preparation. A way to prepare standard asbestos samples of known concentration has not been developed. It is possible to prepare replicate samples of nearly equal concentration. This has been performed through the PAT program. These asbestos samples are distributed by the AIHA to participating laboratories. Since only about one-fourth of a 25-mm sample membrane is required for an asbestos count, any PAT sample can serve as a "standard" for replicate counting.

(e) Sample Mounting.

Note: See Safety Precautions in (6)(a) before proceeding. The objective is to produce samples with a smooth (non-grainy) background in a medium with a refractive index of approximately 1.46. The technique below collapses the filter for easier focusing and produces permanent mounts which are useful for quality control and interlaboratory comparison. An aluminum block or similar device is required for sample preparation.

See Safety Precautions in (6)(a) before proceeding. The objective is to produce samples with a smooth (non-grainy) background in a medium with a refractive index of approximately 1.46. The technique below collapses the filter for easier focusing and produces permanent mounts which are useful for quality control and interlaboratory comparison. An aluminum block or similar device is required for sample preparation.

(i) Heat the aluminum block to about 70°C. The hot block should not be used on any surface that can be damaged by either the heat or from exposure to acetone.

(ii) Ensure that the glass slides and cover glasses are free of dust and fibers.

(iii) Remove the top plug to prevent a vacuum when the cassette is opened. Clean the outside of the cassette if necessary. Cut the seal and/or tape on the cassette with a razor blade. Very carefully separate the base from the extension cowl, leaving the filter and backup pad in the base.

(iv) With a rocking motion cut a triangular wedge from the filter using the scalpel. This wedge should be one-sixth to one-fourth of the filter. Grasp the filter wedge with the forceps on the perimeter of the filter which was clamped between the cassette pieces. DO NOT TOUCH the filter with your finger. Place the filter on the glass slide sample side up. Static electricity will usually keep the filter on the slide until it is cleared.

(v) Place the tip of the micropipette containing about 200 μL acetone into the aluminum block. Insert the glass slide into the receiving slot in the aluminum block. Inject the acetone into the block with slow, steady pressure on the plunger while holding the pipette firmly in place. Wait 3 to 5 seconds for the filter to clear, then remove the pipette and slide from the aluminum block.

(vi) Immediately (less than 30 seconds) place 2.5 to 3.5 μL of triacetin on the filter (Note: Waiting longer than 30 seconds will result in increased index of refraction and decreased contrast between the fibers and the preparation. This may also lead to separation of the cover slip from the slide).

(vii) Lower a cover slip gently onto the filter at a slight angle to reduce the possibility of forming air bubbles. If more than 30 seconds have elapsed between acetone exposure and triacetin application, glue the edges of the cover slip to the slide with lacquer or nail polish.

(viii) If clearing is slow, warm the slide for 15 min on a hot plate having a surface temperature of about 50°C to hasten clearing. The top of the hot block can be used if the slide is not heated too long.

(ix) Counting may proceed immediately after clearing and mounting are completed.

(f) Sample Analysis. Completely align the microscope according to the manufacturer's instructions. Then, align the microscope using the following general alignment routine at the beginning of every counting session and more often if necessary.

(i) Alignment.

(A) Clean all optical surfaces. Even a small amount of dirt can significantly degrade the image.

(B) Rough focus the objective on a sample.

(C) Close down the field iris so that it is visible in the field of view. Focus the image of the iris with the condenser focus. Center the image of the iris in the field of view.

(D) Install the phase telescope and focus on the phase rings. Critically center the rings. Misalignment of the rings results in astigmatism which will degrade the image.

(E) Place the phase-shift test slide on the microscope stage and focus on the lines. The analyst must see line set 3 and should see at least parts of 4 and 5 but, not see line set 6 or 6. A microscope/microscopist combination which does not pass this test may not be used.

(ii) Counting Fibers.

(A) Place the prepared sample slide on the mechanical stage of the microscope. Position the center of the wedge under the objective lens and focus upon the sample.

(B) Start counting from one end of the wedge and progress along a radial line to the other end (count in either direction from perimeter to wedge tip). Select fields randomly, without looking into the eyepieces, by slightly advancing the slide in one direction with the mechanical stage control.

(C) Continually scan over a range of focal planes (generally the upper 10 to 15 μm of the filter surface) with the fine focus control during each field count. Spend at least 5 to 15 seconds per field.

(D) Most samples will contain asbestos fibers with fiber diameters less than 1 μ . Look carefully for faint fiber images. The small diameter fibers will be very hard to see. However, they are an important contribution to the total count.

(E) Count only fibers equal to or longer than 5 μ . Measure the length of curved fibers along the curve.

(F) Count fibers which have a length to width ratio of 3:1 or greater.

(G) Count all the fibers in at least 20 fields. Continue counting until either 100 fibers are counted or 100 fields have been viewed; whichever occurs first. Count all the fibers in the final field.

(H) Fibers lying entirely within the boundary of the Walton-Beckett graticule field receive a count of 1. Fibers crossing the boundary once, having one end within the circle receive a count of 1/2. Do not count any fiber that crosses the graticule boundary more than once. Reject and do not count any other fibers even though they may be visible outside the graticule area. If a fiber touches the circle, it is considered to cross the line.

(I) Count bundles of fibers as one fiber unless individual fibers can be clearly identified and each individual fiber is clearly not connected to another counted fiber.

(J) Record the number of fibers in each field in a consistent way such that filter non-uniformity can be assessed.

(K) Regularly check phase ring alignment.

(L) When an agglomerate (mass of material) covers more than 25% of the field of view, reject the field and select another. Do not include it in the number of fields counted.

(M) Perform a "blind recount" of 1 in every 10 filter wedges (slides). Re-label the slides using a person other than the original counter.

(g) Fiber Identification. As previously mentioned in (1)(c), PCM does not provide positive confirmation of asbestos fibers. Alternate differential counting techniques should be used if discrimination is desirable. Differential counting may include primary discrimination based on morphology, polarized light analysis of fibers, or modification of PCM data by Scanning Electron or Transmission Electron Microscopy. A great deal of experience is required to routinely and correctly perform differential counting. It is discouraged unless it is legally necessary. Then, only if a fiber is obviously not asbestos should it be excluded from the count. Further discussion of this technique can be found in reference 8(j). If there is a question whether a fiber is asbestos or not, follow the rule: "WHEN IN DOUBT, COUNT."

(h) Analytical Recommendations—Quality Control System.

(i) All individuals performing asbestos analysis must have taken the NIOSH course for sampling and evaluating airborne asbestos or an equivalent course.

(ii) Each laboratory engaged in asbestos counting must set up a slide trading arrangement with at least two other laboratories in order to compare performance and eliminate inbreeding of error. The slide exchange occurs at least semi-annually. The round robin results must be posted where all analysts can view individual analyst's results.

(iii) Each laboratory engaged in asbestos counting must participate in the Proficiency Analytical Testing Program, the Asbestos Analyst Registry or equivalent.

(iv) Each analyst must select and count prepared slides from a "slide bank". These are quality assurance counts. The slide bank must be prepared using uniformly distributed samples taken from the workload. Fiber densities should cover the entire range routinely analyzed by the laboratory. These slides are counted blind by all counters to establish an original standard deviation. This historical distribution is compared with the quality assurance counts. A counter must have

95% of all quality control samples counted within three standard deviations of the historical mean. This count is then integrated into a new historical mean and standard deviation for the slide. The analyses done by the counters to establish the slide bank may be used for an interim quality control program if the data are treated in a proper statistical fashion.

7. Calculations.

(a) Calculate the estimated airborne asbestos fiber concentration on the filter sample using the following formula:

$$AC = \frac{\left[\left(\frac{FB}{FL} \right) - \left(\frac{BFB}{BFL} \right) \right] \times ECA}{1000 \times FR \times T \times MFA}$$

Where:

AC	=	Airborne fiber concentration
FB	=	Total number of fibers greater than 5 μm counted
FL	=	Total number of fields counted on the filter
BFB	=	Total number of fibers greater than 5 μm counted in the blank
BFL	=	Total number of fields counted on the blank
ECA	=	Effective collecting area of filter (385 mm ² nominal for a 25-mm filter.)
FR	=	Pump flow rate (L/min)
MFA	=	Microscope count field area (mm ²). This is 0.00785 mm ² for a Walton-Beckett Graticule.
T	=	Sample collection time (min)
1,000	=	Conversion of L to cc

Note: The collection area of a filter is seldom equal to 385 mm². It is appropriate for laboratories to routinely monitor the exact diameter using an inside micrometer. The collection area is calculated according to the formula: Area = π(d/2)²

(b) Short-cut Calculation

Since a given analyst always has the same interpupillary distance, the number of fields per filter for a particular analyst will remain constant for a given size filter. The field size for that analyst is constant (i.e. the analyst is using an assigned microscope and is not changing the reticle). For example, if the exposed area of the filter is always 385 mm² and the size of the field is always 0.00785 mm², the number of fields per filter will always be 49,000. In addition it is necessary to convert liters of air to cc. These three constants can then be combined such that ECA/(1,000 X MFA) = 49. The previous equation simplifies to:

$$AC = \frac{\left(\frac{FB}{FL} \right) - \left(\frac{BFB}{BFL} \right) \times 4}{FR \times T}$$

(c) Recount Calculations. As mentioned in step 13 of 6 (f)(ii), a "blind recount" of 10% of the slides is performed. In all cases, differences will be observed between the first and second counts of the same filter wedge. Most of these differences will be due to chance alone, that is, due to the random variability (precision) of the count method. Statistical recount criteria enables one to decide whether observed differences can be explained due to chance alone or are probably due to systematic differences between analysts, microscopes, or other biasing factors. The following recount criterion is for a pair of counts that estimate AC in fibers/cc. The criterion is given at the type-I error level. That is, there is 5% maximum risk that we will reject a pair of counts for the reason that one might be biased, when the large observed difference is really due to chance. Reject a pair of counts if:

$$\left| \sqrt{AC_2} - \sqrt{AC_1} \right| > 2.78 \times \left(\sqrt{AC_{avg}} \right) \times CV_F$$

Where:

AC ₁	=	lower estimated airborne fiber concentration
AC ₂	=	higher estimated airborne fiber concentration
AC _{avg}	=	average of the two concentration estimates
CV _{FB}	=	CV for the average of the two concentration estimates

If a pair of counts are rejected by this criterion then, recount the rest of the filters in the submitted set. Apply the test and reject any other pairs failing the test. Rejection shall include a memo to the industrial hygienist stating that the sample failed a statistical test for homogeneity and the true air concentration may be significantly different than the reported value.

(d) Reporting Results. Report results to the industrial hygienist as fibers/cc. Use two significant figures. If multiple analyses are performed on a sample, an average of the results is to be reported unless any of the results can be rejected for cause.

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9. Quality Control. The OSHA asbestos regulations require each laboratory to establish a quality control program. The following is presented as an example of how the OSHA-SLTC constructed its internal CV curve as part of meeting this requirement. Data for the CV curve shown below is from 395 samples collected during OSHA compliance inspections and analyzed from October 1980 through April 1986. Each sample was counted by 2 to 5 different counters independently of one another. The standard deviation and the CV statistic was calculated for each sample. This data was then plotted on a graph of CV vs. fibers/mm². A least squares regression was performed using the following equation:

$$CV = \text{antilog}_{10}[A(\log_{10}(x))^2 + B(\log_{10}(x)) + C]$$

Where:

x = the number of fibers/mm²

Application of least squares gave:

A = 0.182205

B = -0.973343

C = 0.327499

Using these values, the equation becomes:

$$CV = \text{antilog}_{10}[0.182205(\log_{10}(x))^2 - 0.973343(\log_{10}(x)) + 0.327499]$$

10. Sampling Pump Flow Rate Corrections. This correction is used if a difference greater than 5% in ambient temperature and/or pressure is noted between calibration and sampling sites and the pump does not compensate for the differences.

$$Q_{act} = Q_{cal} \times \sqrt{\left(\frac{P_{cal}}{P_{act}}\right) \times \left(\frac{T_{act}}{T_{cal}}\right)}$$

Where:

Q_{act} = actual flow rate

Q_{cal} = calibrated flow rate (if a rotameter was used, the rotameter value)

P_{cal} = uncorrected air pressure at calibration

P_{act} = uncorrected air pressure at sampling site

T_{act} = temperature at sampling site (K)

T_{cal} = temperature at calibration (K)

11. Walton-Beckett Graticule

When ordering the Graticule for asbestos counting, specify the exact disc diameter needed to fit the ocular of the microscope and the diameter (mm) of the circular counting area. Instructions for measuring the dimensions necessary are listed:

(a) Insert any available graticule into the focusing eyepiece and focus so that the graticule lines are sharp and clear.

(b) Align the microscope.

(c) Place a stage micrometer on the microscope object stage and focus the microscope on the graduated lines.

(d) Measure the magnified grid length, PL (μm), using the stage micrometer.

(e) Remove the graticule from the microscope and measure its actual grid length, AL (mm). This can be accomplished by using a mechanical stage fitted with verniers, or a jeweler's loupe with a direct reading scale.

(f) Let $D=100 \mu\text{m}$. Calculate the circle diameter, d_c (mm), for the Walton-Beckett graticule and specify the diameter when making a purchase:

$$d_c = \frac{AL \times D}{PL}$$

Example: If PL = 108 μm , AL = 2.93 mm and D = 100 μm , then,

$$d_c = (2.93 \times 100)/108 = 2.71 \text{ mm}$$

(g) Each eyepiece-objective-reticle combination on the microscope must be calibrated. Should any of the three be changed (by zoom adjustment, disassembly, replacement, etc.), the combination must be recalibrated. Calibration may change if interpupillary distance is changed. Measure the field diameter, D (acceptable range: $100 \pm 2 \mu\text{m}$) with a stage micrometer upon receipt of the graticule from the manufacturer. Determine the field area (mm²).

$$\text{Field Area} = \pi(D/2)^2$$

If D = 100 μm = 0.1 mm, then

$$\text{Field Area} = + (0.1 \text{ mm}/2)^2 = 0.00785 \text{ mm}^2$$

The Graticule is available from: Graticules Ltd., Morley Road, Tonbridge TN9 1RN, Kent, England (Telephone 011-44-732-359061). Also available from PTR Optics Ltd., 145 Newton Street, Waltham, MA 02154 [telephone (617) 891-6000] or McCrone Accessories and Components, 2506 S.

Michigan Ave., Chicago, IL 60616 [phone (312) 842-7100].
The graticule is custom made for each microscope.

BILLING CODE 4510-26-P

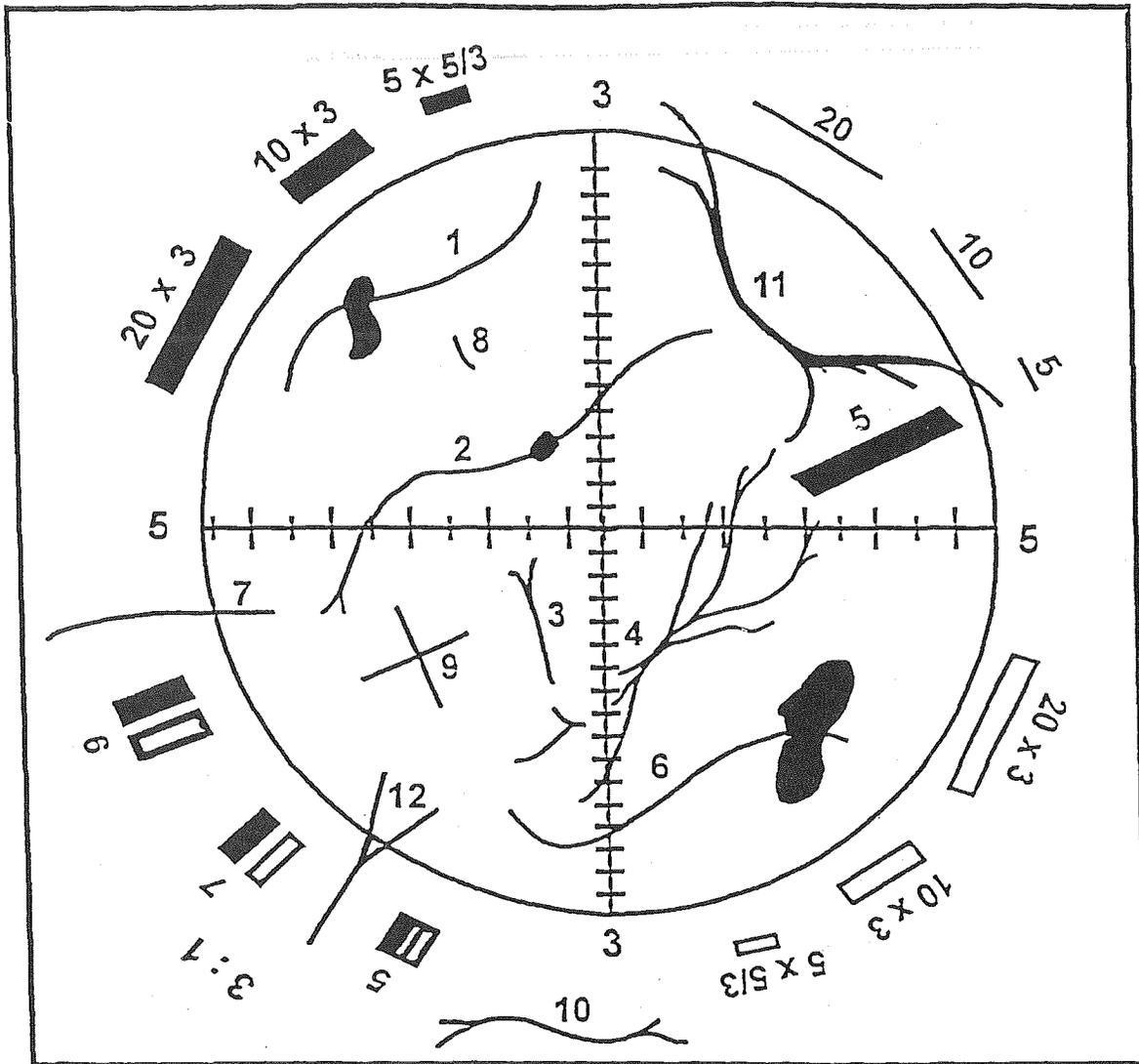


Figure 1: Walton-Beckett Graticule with some explanatory fibers.
Counts for the Fibers in the Figure

Structure No.	Count	Explanation
1 to 6	1	Single fibers all contained within the circle.
7	1/2	Fiber crosses circle once.
8	0	Fiber too short.
9	2	Two crossing fibers.
10	0	Fiber outside graticule.
11	0	Fiber crosses graticule twice.
12	1/2	Although split, fiber only crosses once.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07737, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07737, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07737, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07737, filed 4/27/87.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-07739 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-11019 Spray-finishing operations. (1) Definitions.

(a) "Spray-finishing operations" means employment of methods wherein organic or inorganic materials are utilized in dispersed form from deposit on surfaces to be coated, treated or cleaned. Such methods of deposit may involve either automatic, manual, or electrostatic deposition but do not include metal spraying or metallizing, dipping, flow coating, roller coating, tumbling, centrifuging, or spray washing and degreasing as conducted in self-contained washing and degreasing machines or systems.

(b) "Spray booth" spray booths are defined and described in WAC 296-24-370 through 296-24-37007. (See sections 103, 104, and 105 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.)

(c) "Spray room" means a room in which spray-finishing operations not conducted in a spray booth are performed separately from other areas.

(d) "Minimum maintained velocity" means the velocity of air movement which must be maintained in order to meet minimum specified requirements for health and safety.

(2) Location and application. Spray booths or spray rooms are to be used to enclose or confine all operations. Spray-finishing operations shall be located as provided in sections 201 through 206 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.

(3) Design and construction of spray booths.

(a) Spray booths shall be designed and constructed in accordance with WAC 296-24-370 through 296-24-37007 (see sections 301-304 and 306-310 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969), for general construction specifications.

Note: For a more detailed discussion of fundamentals relating to this subject, see ANSI Z9.2-1960.

(i) Lights, motors, electrical equipment and other sources of ignition shall conform to the requirements of WAC 296-24-370. (See section 310 and chapter 4 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.)

(ii) In no case shall combustible material be used in the construction of a spray booth and supply or exhaust duct connected to it.

(b) Unobstructed walkways shall not be less than 6 1/2 feet high and shall be maintained clear of obstruction from any work location in the booth to a booth exit or open booth front. In booths where the open front is the only exit, such

exits shall be not less than 3 feet wide. In booths having multiple exits, such exits shall not be less than 2 feet wide, provided that the maximum distance from the work location to the exit is 25 feet or less. Where booth exits are provided with doors, such doors shall open outward from the booth.

(c) Baffles, distribution plates, and dry-type overspray collectors shall conform to the requirements of WAC 296-24-370. (See sections 304 and 305 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.)

(i) Overspray filters shall be installed and maintained in accordance with the requirements of WAC 296-24-370, (See section 305 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969), and shall only be in a location easily accessible for inspection, cleaning, or replacement.

(ii) Where effective means, independent of the overspray filters are installed which will result in design air distribution across the booth cross section, it is permissible to operate the booth without the filters in place.

(d)(i) For wet or water-wash spray booths, the water-chamber enclosure, within which intimate contact of contaminated air and cleaning water or other cleaning medium is maintained, if made of steel, shall be 18 gauge or heavier and adequately protected against corrosion.

(ii) Chambers may include scrubber spray nozzles, headers, troughs, or other devices. Chambers shall be provided with adequate means for creating and maintaining scrubbing action for removal of particulate matter from the exhaust air stream.

(e) Collecting tanks shall be of welded steel construction or other suitable noncombustible material. If pits are used as collecting tanks, they shall be concrete, masonry, or other material having similar properties.

(i) Tanks shall be provided with weirs, skimmer plates, or screens to prevent sludge and floating paint from entering the pump suction box. Means for automatically maintaining the proper water level shall also be provided. Fresh water inlets shall not be submerged. They shall terminate at least one pipe diameter above the safety overflow level of the tank.

(ii) Tanks shall be so constructed as to discourage accumulation of hazardous deposits.

(f) Pump manifolds, risers, and headers shall be adequately sized to insure sufficient water flow to provide efficient operation of the water chamber.

(4) Design and construction of spray rooms.

(a) Spray rooms, including floors, shall be constructed of masonry, concrete, or other noncombustible material.

(b) Spray rooms shall have noncombustible fire doors and shutters.

(c) Spray rooms shall be adequately ventilated so that the atmosphere in the breathing zone of the operator shall be maintained in accordance with the requirements of (6)(b) of this section.

(d) Spray rooms used for production spray-finishing operations shall conform to the requirements of spray booths.

(5) Ventilation.

(a) Ventilation shall be provided in accordance with provisions of WAC 296-24-370, (See chapter 5 of the Standard for Spray Finishing Using Flammable or Combustible Mate-

rials, NFPA No. 33-1969), and in accordance with the following:

(i) Where a fan plenum is used to equalize or control the distribution of exhaust air movement through the booth, it shall be of sufficient strength or rigidity to withstand the differential air pressure or other superficially imposed loads for which the equipment is designed and also to facilitate cleaning. Construction specifications shall be at least equivalent to those of (5)(c) of this section.

(ii) All fan ratings shall be in accordance with Air Moving and Conditioning Association Standard Test Code for Testing Air Moving Devices, Bulletin 210, April 1962.

(b) Inlet or supply ductwork used to transport makeup air to spray booths or surrounding areas shall be constructed of noncombustible materials.

(i) If negative pressure exists within inlet ductwork, all seams and joints shall be sealed if there is a possibility of infiltration of harmful quantities of noxious gases, fumes, or mists from areas through which ductwork passes.

(ii) Inlet ductwork shall be sized in accordance with volume flow requirements and provide design air requirements at the spray booth.

(iii) Inlet ductwork shall be so supported throughout its length to sustain at least its own weight plus any negative pressure which is exerted upon it under normal operating conditions.

(c) Ducts shall be so constructed as to provide structural strength and stability at least equivalent to sheet steel of not less than the following thickness:

DIAMETER OR GREATER DIMENSION	(U.S. gauge)
Up to 8 inches inclusive	No. 24
Over 8 inches to 18 inches inclusive	No. 22
Over 18 inches to 30 inches inclusive	No. 20
Over 30 inches	No. 18

(i) Exhaust ductwork shall be adequately supported throughout its length to sustain its weight plus any normal accumulation in interior during normal operating conditions and any negative pressure exerted upon it.

(ii) Exhaust ductwork shall be sized in accordance with good design practice which shall include consideration of fan capacity, length of duct, number of turns and elbows, variation in size, volume, and character of materials being exhausted. See American National Standard Z9.2-1960 for further details and explanation concerning elements of design.

(iii) Longitudinal joints in sheet steel ductwork shall be either lock-seamed, riveted, or welded. For other than steel construction, equivalent securing of joints shall be provided.

(iv) Circumferential joints in ductwork shall be substantially fastened together and lapped in the direction of airflow. At least every fourth joint shall be provided with connecting flanges, bolted together or of equivalent fastening security.

(v) Inspection or clean-out doors shall be provided for every 9 to 12 feet of running length for ducts up to 12 inches in diameter, but the distance between clean-out doors may be greater for larger pipes. (See 8.3.21 of American National Standard Z9.1-1960.) A clean-out door or doors shall be pro-

vided for servicing the fan, and where necessary, a drain shall be provided.

(vi) Where ductwork passes through a combustible roof or wall, the roof or wall shall be protected at the point of penetration by open space or fire-resistive material between the duct and the roof or wall. When ducts pass through fire-walls, they shall be provided with automatic fire dampers on both sides of the wall, except that three-eighth-inch steel plates may be used in lieu of automatic fire dampers for ducts not exceeding 18 inches in diameter.

(vii) Ductwork used for ventilating any process covered in this standard shall not be connected to ducts ventilating any other process or any chimney or flue used for conveying any products of combustion.

(6) Velocity and air flow requirements.

(a) Except where a spray booth has an adequate air replacement system, the velocity of air into all openings of a spray booth shall be not less than that specified in Table 14 for the operating conditions specified. An adequate air replacement system is one which introduces replacement air upstream or above the object being sprayed and is so designed that the velocity of air in the booth cross section is not less than that specified in Table 14 when measured upstream or above the object being sprayed.

TABLE 14
MINIMUM MAINTAINED VELOCITIES
INTO SPRAY BOOTHS

Operating Airflow conditions for object completely inside booth	Crossdraft f.p.m.	Velocities, f.p.m.	
		Design	Range
Electrostatic and automatic airless operation contained in booth without operator.	Negligible	50 large booth 100 small booth	50-75 75-125
Air-operated guns, manual or automatic	Up to 50.	100 large booth 150 small booth	75-125 125-175
Air-operated guns, manual or automatic	Up to 100.	150 large booth 200 small booth	125-175 150-250

Notes:

- (1) Attention is invited to the fact that the effectiveness of the spray booth is dependent upon the relationship of the depth of the booth to its height and width.
- (2) Crossdrafts can be eliminated through proper design and such design should be sought. Crossdrafts in excess of 100 fpm (feet per minute) should not be permitted.
- (3) Excessive air pressures result in loss of both efficiency and material waste in addition to creating a backlash that may carry overspray and fumes into adjacent work areas.
- (4) Booths should be designed with velocity shown in the column headed "Design." However, booths operating with velocities shown in the column headed "Range" are in compliance with this standard.

(b) In addition to the requirements in (6)(a) of this section the total air volume exhausted through a spray booth shall be such as to dilute solvent vapor to at least 25 percent of the lower explosive limit of the solvent being sprayed. An example of the method of calculating this volume is given below.

Example: To determine the lower explosive limits of the most common solvents used in spray finishing, see Table 15. Column 1 gives the number of cubic feet of vapor per gallon of solvent and col-

umn 2 gives the lower explosive limit (LEL) in percentage by volume of air. Note that the quantity of solvent will be diminished by the quantity of solids and nonflammable contained in the finish.

To determine the volume of air in cubic feet necessary to dilute the vapor from 1 gallon of solvent to 25 percent of the lower explosive limit, apply the following formula:

$$\text{Dilution volume required per gallon of solvent} = \frac{4 (100\text{-LEL}) (\text{cubic feet of vapor per gallon})}{\text{LEL}}$$

Using toluene as the solvent.

- (1) LEL of toluene from Table 15, column 2, is 1.4 percent.
- (2) Cubic feet of vapor per gallon from Table 15, column 1, is 30.4 cubic feet per gallon.

$$\text{Dilution volume required} = \frac{4 (100-1.4) 30.4}{1.4} = 8,564 \text{ cubic feet.}$$

- (4) To convert to cubic feet per minute of required ventilation, multiply the dilution volume required per gallon of solvent by the number of gallons of solvent evaporated per minute.

TABLE 15
LOWER EXPLOSIVE LIMIT OF SOME COMMONLY USED SOLVENTS

Solvent	Cubic feet of vapor per gallon of liquid at 70°F.	Lower explosive limit in percent by volume of air at 70°F.
	Column 1	Column 2
Acetone	44.0	2.6
Amyl Acetate (iso)	21.6	1.0 ¹
Amyl Alcohol (n)	29.6	1.2
Amyl Alcohol (iso)	29.6	1.2
Benzene	36.8	1.4 ¹
Butyl Acetate (n)	24.8	1.7
Butyl Alcohol (n)	35.2	1.4
Butyl Cellosolve	24.8	1.1
Cellosolve	33.6	1.8
Cellosolve Acetate	23.2	1.7
Cyclohexanone	31.2	1.1 ¹
1,1 Dichloroethylene	42.4	5.6
1,2 Dichloroethylene	42.4	9.7
Ethyl Acetate	32.8	2.5
Ethyl Alcohol	55.2	4.3
Ethyl Lactate	28.0	1.5 ¹
Methyl Acetate	40.0	3.1
Methyl Alcohol	80.8	7.3
Methyl Cellosolve	40.8	2.5
Methyl Ethyl Ketone	36.0	1.8
Methyl n-Propyl Ketone	30.4	1.5
Naphtha (VM&P) (76° Naphtha)	22.4	0.9
Naphtha (100° Flash) Safety Solvent-Stoddard Solvent	23.2	1.1
Propyl Acetate (n)	27.2	2.0
Propyl Acetate (iso)	28.0	1.8
Propyl Alcohol (n)	44.8	2.1
Propyl Alcohol (iso)	44.0	2.0

Toluene	30.4	1.4
Turpentine	20.8	0.8
Xylene (o)	26.4	1.0

¹At 212°F.

(c)(i) When an operator is in a booth downstream of the object being sprayed, an air-supplied respirator or other type of respirator certified by NIOSH under 42 CFR part 84 for the material being sprayed should be used by the operator.

(ii) Where downdraft booths are provided with doors, such doors shall be closed when spray painting.

(7) Make-up air.

(a) Clean fresh air, free of contamination from adjacent industrial exhaust systems, chimneys, stacks, or vents, shall be supplied to a spray booth or room in quantities equal to the volume of air exhausted through the spray booth.

(b) Where a spray booth or room receives make-up air through self-closing doors, dampers, or louvers, they shall be fully open at all times when the booth or room is in use for spraying. The velocity of air through such doors, dampers, or louvers shall not exceed 200 feet per minute. If the fan characteristics are such that the required air flow through the booth will be provided, higher velocities through the doors, dampers, or louvers may be used.

(c)(i) Where the air supply to a spray booth or room is filtered, the fan static pressure shall be calculated on the assumption that the filters are dirty to the extent that they require cleaning or replacement.

(ii) The rating of filters shall be governed by test data supplied by the manufacturer of the filter. A pressure gauge shall be installed to show the pressure drop across the filters. This gauge shall be marked to show the pressure drop at which the filters require cleaning or replacement. Filters shall be replaced or cleaned whenever the pressure drop across them becomes excessive or whenever the air flow through the face of the booth falls below that specified in Table 14.

(d)(i) Means of heating make-up air to any spray booth or room, before or at the time spraying is normally performed, shall be provided in all places where the outdoor temperature may be expected to remain below 55° F. for appreciable periods of time during the operation of the booth except where adequate and safe means of radiant heating for all operating personnel affected is provided. The replacement air during the heating seasons shall be maintained at not less than 65° F. at the point of entry into the spray booth or spray room. When otherwise unheated make-up air would be at a temperature of more than 10° F. below room temperature, its temperature shall be regulated as provided in section 3.6 of ANSI Z9.2-1960.

(ii) As an alternative to an air replacement system complying with the preceding section, general heating of the building in which the spray room or booth is located may be employed provided that all occupied parts of the building are maintained at not less than 65° F. when the exhaust system is in operation or the general heating system supplemented by other sources of heat may be employed to meet this requirement.

(iii) No means of heating make-up air shall be located in a spray booth.

(iv) Where make-up air is heated by coal or oil, the products of combustion shall not be allowed to mix with the make-up air, and the products of combustion shall be conducted outside the building through a flue terminating at a point remote from all points where make-up air enters the building.

(v) Where make-up air is heated by gas, and the products of combustion are not mixed with the make-up air but are conducted through an independent flue to a point outside the building remote from all points where make-up air enters the building, it is not necessary to comply with (7)(d)(vi) of this section.

(vi) Where make-up air to any manually operated spray booth or room is heated by gas and the products of combustion are allowed to mix with the supply air, the following precautions must be taken:

(A) The gas must have a distinctive and strong enough odor to warn workmen in a spray booth or room of its presence if in an unburned state in the make-up air.

(B) The maximum rate of gas supply to the make-up air heater burners must not exceed that which would yield in excess of 200 p.p.m. (parts per million) of carbon monoxide or 2,000 p.p.m. of total combustible gases in the mixture if the unburned gas upon the occurrence of flame failure were mixed with all of the make-up air supplied.

(C) A fan must be provided to deliver the mixture of heated air and products of combustion from the plenum chamber housing the gas burners to the spray booth or room.

(8) Scope. Spray booths or spray rooms are to be used to enclose or confine all spray finishing operations covered by this paragraph. This paragraph does not apply to the spraying of the exteriors of buildings, fixed tanks, or similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-11019, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-11019, filed 7/27/81; Order 73-3, § 296-62-11019, filed 5/7/73.]

WAC 296-62-11021 Open surface tanks. (1) General.

(a) This section applies to all operations involving the immersion of materials in liquids, or in the vapors of such liquids, for the purpose of cleaning or altering the surface or adding to or imparting a finish thereto or changing the character of the materials, and their subsequent removal from the liquid or vapor, draining, and drying. These operations include washing, electroplating, anodizing, pickling, quenching, dyeing, dipping, tanning, dressing, bleaching, degreasing, alkaline cleaning, stripping, rinsing, digesting, and other similar operations.

(b) Except where specific construction specifications are prescribed in this section, hoods, ducts, elbows, fans, blowers, and all other exhaust system parts, components, and supports thereof shall be so constructed as to meet conditions of service and to facilitate maintenance and shall conform in construction to the specifications contained in American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960.

(2) Classification of open-surface tank operations.

(a) Open-surface tank operations shall be classified into 16 classes, numbered A-1 to D-4, inclusive.

(b) Determination of class. Class is determined by two factors, hazard potential designated by a letter from A to D, inclusive, and rate of gas, vapor, or mist evolution designated by a number from 1 to 4, inclusive (for example, B.3).

(c) Hazard potential is an index, on a scale of from A to D, inclusive, of the severity of the hazard associated with the substance contained in the tank because of the toxic, flammable, or explosive nature of the vapor, gas, or mist produced therefrom. The toxic hazard is determined from the concentration, measured in parts by volume of a gas or vapor, per million parts by volume of contaminated air (ppm), or in milligrams of mist per cubic meter of air (mg/m³), below which ill effects are unlikely to occur to the exposed worker. The concentrations shall be those in WAC 296-62-075 through 296-62-07515.

(d) The relative fire or explosion hazard is measured in degrees Fahrenheit in terms of the closed-cup flash point of the substance in the tank. Detailed information on the prevention of fire hazards in dip tanks may be found in Dip Tanks Containing Flammable or Combustible Liquids, NFPA No. 34-1966, National Fire Protection Association. Where the tank contains a mixture of liquids, other than organic solvents, whose effects are additive, the hygienic standard of the most toxic component (for example, the one having the lowest ppm or mg/m³) shall be used, except where such substance constitutes an insignificantly small fraction of the mixture. For mixtures of organic solvents, their combined effect, rather than that of either individually, shall determine the hazard potential. In the absence of information to the contrary, the effects shall be considered as additive. If the sum of the ratios of the airborne concentration of that contaminant exceeds unity, the toxic concentration shall be considered to have been exceeded. (See Note A of (2)(e) of this section.)

(e) Hazard potential shall be determined from Table 16, with the value indicating greater hazard being used. When the hazardous material may be either a vapor with a permissible exposure limit in ppm or a mist with a TLV in mg/m³, the TLV indicating the greater hazard shall be used (for example, A takes precedence over B or C; B over C; C over D).

Note A:

$$\frac{c_1}{PEL} + \frac{c_2}{PEL} + \frac{c_3}{PEL} + \dots + \frac{c_N}{PEL} > 1$$

where:

c = Concentration measured at the operation in ppm.

TABLE 16
DETERMINATION OF HAZARD POTENTIAL

Hazard potential	Toxicity Group		
	Gas or vapor (ppm)	Mist (mg/m ³)	Flash point (in degrees F.)
A.....	0 - 10	0 - 0.1	.....
B.....	11 - 100	0.11 - 1.0	Under 100
C.....	101 - 500	1.1 - 10	100-200
D.....	Over 500	Over 10	Over 200

(f) Rate of gas, vapor, or mist evolution is a numerical index, on a scale of from 1 to 4, inclusive, both of the relative capacity of the tank to produce gas, vapor, or mist and of the

relative energy with which it is projected or carried upwards from the tank. Rate is evaluated in terms of:

(i) The temperature of the liquid in the tank in degrees Fahrenheit;

(ii) The number of degrees Fahrenheit that this temperature is below the boiling point of the liquid in degrees Fahrenheit;

(iii) The relative evaporation of the liquid in still air at room temperature in an arbitrary scale—fast, medium, slow, or nil; and

(iv) The extent that the tank gases or produces mist in an arbitrary scale—high, medium, low, and nil. (See Table 17, Note 2.) Gassing depends upon electrochemical or mechanical processes, the effects of which have to be individually evaluated for each installation (see Table 17, Note 3).

(g) Rate of evolution shall be determined from Table 17. When evaporation and gassing yield different rates, the lowest numerical value shall be used.

TABLE 17
DETERMINATION OF RATE OF GAS,
VAPOR, OR MIST EVOLUTION¹

Rate	Liquid temperature, °F	Degrees below boiling point	Evaporation ²	Relative Gassing ³
1.....	Over 200	0-20	Fast.....	High
2.....	150-200	21-50	Medium...	Medium
3.....	94-149	51-100	Slow.....	Low
4.....	Under 94	Over 100	Nil.....	Nil

Note 1. In certain classes of equipment, specifically vapor degreasers, an internal condenser or vapor level thermostat is used to prevent the vapor from leaving the tank during normal operations. In such cases, rate of vapor evolution from the tank into the workroom is not dependent upon the factors listed in the table, but rather upon abnormalities of operating procedure, such as carry out of vapors from excessively fast action, dragout of liquid by entrainment in parts, contamination of solvent by water and other materials, or improper heat balance. When operating procedure is excellent, effective rate of evolution may be taken as 4. When operating procedures are average, the effective rate of evolution may be taken as 3. When operation is poor, a rate of 2 or 1 is indicated, depending upon observed conditions.

Note 2. Relative evaporation rate is determined according to the methods described by A. K. Doolittle in *Industrial and Engineering Chemistry*, vol. 27, p. 1169, (3) where time for 100—percent evaporation is as follows: Fast: 0-3 hours; Medium: 3-12 hours; Slow: 12-50 hours; Nil: more than 50 hours.

Note 3. Gassing means the formation by chemical or electrochemical action of minute bubbles of gas under the surface of the liquid in the tank and is generally limited to aqueous solutions.

(3) Ventilation. Where ventilation is used to control potential exposures to workers as defined in (2)(c) of this section, it shall be adequate to reduce the concentration of the air contaminant to the degree that a hazard to the worker does not exist. Methods of ventilation are discussed in *American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems*, Z9.2-1960.

(4) Control requirements.

(a) Control velocities shall conform to Table 18 in all cases where the flow of air past the breathing or working zone of the operator and into the hoods is undisturbed by

local environmental conditions, such as open windows, wall fans, unit heaters, or moving machinery.

(b) All tanks exhausted by means of hoods which;

(i) Project over the entire tank;

(ii) Are fixed in position in such a location that the head of the workman, in all his normal operating positions while working at the tank, is in front of all hood openings; and

(iii) Are completely enclosed on at least two sides, shall be considered to be exhausted through an enclosing hood.

(iv) The quantity of air in cubic feet per minute necessary to be exhausted through an enclosing hood shall be not less than the product of the control velocity times the net area of all openings in the enclosure through which air can flow into the hood.

TABLE 18
CONTROL VELOCITIES IN FEET PER MINUTE (F.P.M.) FOR UNDISTURBED LOCATIONS

Class (See Sub-paragraph (2) and Tables 16 and 17)	Enclosing hood (See Subparagraph (4)(ii))		Lateral exhaust ¹ (See Subparagraph (4)(iii))	Canopy hood ² (See Subparagraph (4)(iv))	
	One open side	Two open sides		Three open sides	Four open sides
A-1 and A-2	100	150	150	Do not use	Do not use
A-3 (Note 2), B-1, B-2, and C-1	75	100	100	125	175
B-3, C-2, and D-1 (Note 3)	65	90	75	100	150
A-4 (Note 2), C-3, and D-2 (Note 3)	50	75	50	75	125
B-4, C-4, D-3 (Note 3), and D-4	General room ventilation required.				

¹ See Table 19 for computation of ventilation rate.

² Do not use canopy hood for Hazard Potential A processes.

³ Where complete control of hot water is desired, design as next highest class.

(c) All tanks exhausted by means of hoods which do not project over the entire tank, and in which the direction of air movement into the hood or hoods is substantially horizontal, shall be considered to be laterally exhausted. The quantity of air in cubic feet per minute necessary to be laterally exhausted per square foot of tank area in order to maintain the required control velocity shall be determined from Table 19 for all variations in ratio of tank width (W) to tank length (L). The total quantity of air in cubic feet per minute required to be exhausted per tank shall be not less than the product of the area of tank surface times the cubic feet per minute per square foot of tank area, determined from Table 19.

(i) For lateral exhaust hoods over 42 inches wide, or where it is desirable to reduce the amount of air removed

from the workroom, air supply slots or orifices shall be provided along the side or the center of the tank opposite from the exhaust slots. The design of such systems shall meet the following criteria:

(A) The supply air volume plus the entrained air shall not exceed 50 percent of the exhaust volume.

(B) The velocity of the supply airstream as it reaches the effective control area of the exhaust slot shall be less than the effective velocity over the exhaust slot area.

(C) The vertical height of the receiving exhaust hood, including any baffle, shall not be less than one-quarter the width of the tank.

(D) The supply airstream shall not be allowed to impinge on obstructions between it and the exhaust slot in such a manner as to significantly interfere with the performance of the exhaust hood.

TABLE 19
MINIMUM VENTILATION RATE IN CUBIC FEET OF AIR PER MINUTE PER SQUARE FOOT OF TANK AREA FOR LATERAL EXHAUST

Required minimum control velocity, f.p.m. (from Table)	C.f.m. per sq. ft. to maintain required minimum velocities at following ratios (tank width (W)/tank length (L)). ^{1,3}				
	0.0-0.09	0.1-0.24	0.25-0.49	0.5-0.99	1.0-2.0
Hood along one side or two parallel sides of tank when one hood is against a wall or baffle. ²					
Also for a manifold along tank centerline. ³					
50	50	60	75	90	100
75	75	90	110	130	150
100	100	125	150	175	200
150	150	190	225	260	300
Hood along one side or two parallel sides of free standing tank not against wall or baffle.					
50	75	90	100	110	125
75	110	130	150	170	190
100	150	175	200	225	250
150	225	260	300	340	375

¹ It is not practicable to ventilate across the long dimension of a tank whose ratio W/L exceeds 2.0.

It is understandable to do so when W/L exceeds 1.0. For circular tanks with lateral exhaust along up the circumference use W/L= 1.0 for over one-half the circumference use W/L= 0.5.

² Baffle is a vertical plate the same length as the tank, and with the top of the plate as high as the tank is wide. If the exhaust hood is on the side of a tank against a building wall or close to it, it is perfectly baffled.

³ Use W/L as tank width in computing when manifold is along centerline, or when hoods are used on two parallel sides of a tank.

Tank Width (W) means the effective width over which the hood must pull air to operate (for example, where the hood face is not back from the edge of the tank, this set back must be added in measuring tank width). The surface area of tanks can frequently be reduced and better control obtained (particularly on conveyORIZED systems) by using covers extending from the upper edges of the slots toward the center of the tank.

(E) Since most failure of push-pull systems result from excessive supply air volumes and pressures, methods of measuring and adjusting the supply air shall be provided. When satisfactory control has been achieved, the adjustable features of the hood shall be fixed so that they will not be altered.

(d) All tanks exhausted by means of hoods which project over the entire tank, and which do not conform to the definition of enclosing hoods, shall be considered to be overhead

canopy hoods. The quantity of air in cubic feet per minute necessary to be exhausted through a canopy hood shall be not less than the product of the control velocity times the net area of all openings between the bottom edges of the hood and the top edges of the tank.

(e) The rate of vapor evolution (including steam or products of combustion) from the process shall be estimated. If the rate of vapor evolution is equal to or greater than 10 percent of the calculated exhaust volume required, the exhaust volume shall be increased in equal amount.

(5) Spray cleaning and degreasing. Wherever spraying or other mechanical means are used to disperse a liquid above an open-surface tank, control must be provided for the airborne spray. Such operations shall be enclosed as completely as possible. The inward air velocity into the enclosure shall be sufficient to prevent the discharge of spray into the workroom. Mechanical baffles may be used to help prevent the discharge of spray. Spray painting operations are covered in WAC 296-62-11019.

(6) Control means other than ventilation. Tank covers, foams, beads, chips, or other materials floating on the tank surface so as to confine gases, mists, or vapors to the area under the cover or to the foam, bead, or chip layer; or surface tension depressive agents added to the liquid in the tank to minimize mist formation, or any combination thereof, may all be used as gas, mist, or vapor control means for open-surface tank operations, provided that they effectively reduce the concentrations of hazardous materials in the vicinity of the worker below the limits set in accordance with (2) of this section.

(7) System design.

(a) The equipment for exhausting air shall have sufficient capacity to produce the flow of air required in each of the hoods and openings of the system.

(b) The capacity required in (7)(a) of this section shall be obtained when the airflow producing equipment is operating against the following pressure losses, the sum of which is the static pressure:

- (i) Entrance losses into the hood.
- (ii) Resistance to airflow in branch pipe including bends and transformations.
- (iii) Entrance loss into the main pipe.
- (iv) Resistance to airflow in main pipe including bends and transformations.
- (v) Resistance of mechanical equipment; that is, filters, washers, condensers, absorbers, etc., plus their entrance and exit losses.
- (vi) Resistance in outlet duct and discharge stack.

(c) Two or more operations shall not be connected to the same exhaust system where either one or the combination of the substances removed may constitute a fire, explosion, or chemical reaction hazard in the duct system. Traps or other devices shall be provided to insure that condensate in ducts does not drain back into any tank.

(d) The exhaust system, consisting of hoods, ducts, air mover, and discharge outlet shall be designed in accordance with American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960, or the manual, Industrial Ventilation, published by the American Conference of Governmental Industrial Hygien-

ists. Airflow and pressure loss data provided by the manufacturer of any air cleaning device shall be included in the design calculations.

(8) Operation.

(a) The required airflow shall be maintained at all times during which gas, mist, or vapor is emitted from the tank, and at all times the tank, the draining, or the drying area is in operation or use. When the system is first installed, the airflow from each hood shall be measured by means of a pitot traverse in the exhaust duct and corrective action taken if the flow is less than that required. When the proper flow is obtained, the hood static pressure shall be measured and recorded. At intervals of not more than 3 months operation, or after a prolonged shutdown period, the hoods and duct system shall be inspected for evidence of corrosion or damage. In any case where the airflow is found to be less than required, it shall be increased to the required value. (Information on airflow and static pressure measurement and calculations may be found in American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960, or in the manual, Industrial Ventilation, published by the American Conference of Governmental Industrial Hygienists.)

(b) The exhaust system shall discharge to the outer air in such a manner that the possibility of its effluent entering any building is at a minimum. Recirculation shall only be through a device for contaminant removal which will prevent the creation of a health hazard in the room or area to which the air is recirculated.

(c) A volume of outside air in the range of 90 percent to 110 percent of the exhaust volume shall be provided to each room having exhaust hoods. The outside air supply shall enter the workroom in such a manner as not to be detrimental to any exhaust hood. The airflow of the makeup air system shall be measured on installation. Periodically, thereafter, the airflow should be remeasured, and corrective action shall be taken when the airflow is below that required. The makeup air shall be uncontaminated.

(9) Personal protection.

(a) All employees working in and around open surface tank operations must be instructed as to the hazards of their respective jobs, and in the personal protection and first aid procedures applicable to these hazards.

(b) All persons required to work in such a manner that their feet may become wet shall be provided with rubber or other impervious boots or shoes, rubbers, or wooden-soled shoes sufficient to keep feet dry.

(c) All persons required to handle work wet with a liquid other than water shall be provided with gloves impervious to such a liquid and of a length sufficient to prevent entrance of liquid into the tops of the gloves. The interior of gloves shall be kept free from corrosive or irritating contaminants.

(d) All persons required to work in such a manner that their clothing may become wet shall be provided with such aprons, coats, jackets, sleeves, or other garments made of rubber, or of other materials impervious to liquids other than water, as are required to keep their clothing dry. Aprons shall extend well below the top of boots to prevent liquid splashing into the boots. Provision of dry, clean, cotton clothing along with rubber shoes or short boots and an apron impervious to

liquids other than water shall be considered a satisfactory substitute where small parts are cleaned, plated, or acid dipped in open tanks and rapid work is required.

(e) Whenever there is a danger of splashing, for example, when additions are made manually to the tanks, or when acids and chemicals are removed from the tanks, the employees so engaged shall be required to wear either tight-fitting chemical goggles or an effective face shield. (See WAC 296-24-078.)

(f) When, during emergencies as described in (11)(e) of this section, employees must be in areas where concentrations of air contaminants are greater than the limit set by (2)(c) of this section or oxygen concentrations are less than 19.5%, they must be required to wear respirators adequate to reduce their exposure to a level below these limits or that provide adequate oxygen. Such respirators must also be provided in marked, quickly accessible storage compartments built for the purpose, when there exists the possibility of accidental release of hazardous concentrations of air contaminants. Respirators must be certified by NIOSH under 42 CFR part 84 and used in accordance with the applicable provisions of chapter 296-62 WAC Part E.

(g) Near each tank containing a liquid which may burn, irritate, or otherwise be harmful to the skin if splashed upon the worker's body, there shall be a supply of clean cold water. The water pipe (carrying a pressure not exceeding 25 pounds) shall be provided with a quick opening valve and at least 48 inches of hose not smaller than three-fourths inch, so that no time may be lost in washing off liquids from the skin or clothing. Alternatively, deluge showers and eye flushes shall be provided in cases where harmful chemicals may be splashed on parts of the body.

(h) Operators with sores, burns, or other skin lesions requiring medical treatment shall not be allowed to work at their regular operations until so authorized by a physician. Any small skin abrasions, cuts, rash, or open sores which are found or reported shall be treated by a properly designated person so that chance of exposures to the chemicals are removed. Workers exposed to chromic acids shall have a periodic examination made of the nostrils and other parts of the body, to detect incipient ulceration.

(i) Sufficient washing facilities, including soap, individual towels, and hot water, shall be provided for all persons required to use or handle any liquids which may burn, irritate, or otherwise be harmful to the skin, on the basis of at least one basin (or its equivalent) with a hot water faucet for every 10 employees. (See WAC 296-24-12009.)

(j) Locker space or equivalent clothing storage facilities shall be provided to prevent contamination of street clothing.

(k) First aid facilities specific to the hazards of the operations conducted shall be readily available.

(10) Special precautions for cyanide. Dikes or other arrangements shall be provided to prevent the possibility of intermixing of cyanide and acid in the event of tank rupture.

(11) Inspection, maintenance, and installation.

(a) Floors and platforms around tanks shall be prevented from becoming slippery both by original type of construction and by frequent flushing. They shall be firm, sound, and of the design and construction to minimize the possibility of tripping.

(b) Before cleaning the interior of any tank, the contents shall be drained off, and the cleanout doors shall be opened where provided. All pockets in tanks or pits, where it is possible for hazardous vapors to collect, shall be ventilated and cleared of such vapors.

(c) Tanks which have been drained to permit employees to enter for the purposes of cleaning, inspection, or maintenance may contain atmospheres which are hazardous to life or health, through the presence of flammable or toxic air contaminants, or through the absence of sufficient oxygen. Before employees shall be permitted to enter any such tank, appropriate tests of the atmosphere shall be made to determine if the limits set by (2)(c) of this section are exceeded, or if the oxygen concentration is less than 19.5%.

(d) If the tests made in accordance with (11)(c) of this section indicate that the atmosphere in the tank is unsafe, before any employee is permitted to enter the tank, the tank shall be ventilated until the hazardous atmosphere is removed, and ventilation shall be continued so as to prevent the occurrence of a hazardous atmosphere as long as an employee is in the tank.

(e) If, in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators, such as self-contained breathing apparatus; hose mask with blower, if there is a possibility of oxygen deficiency; or a gas mask, selected and operated in accordance with (9)(f) of this section, shall be used. If a contaminant in the tank can cause dermatitis, or be absorbed through the skin, the employee entering the tank shall also wear protective clothing. At least one trained standby employee, with suitable respirator, shall be present in the nearest uncontaminated area. The standby employee must be able to communicate with the employee in the tank and be well able to haul him out of the tank with a lifeline if necessary.

(f) Maintenance work requiring welding or open flame, where toxic metal fumes such as cadmium, chromium, or lead may be evolved, shall be done only with sufficient local exhaust ventilation to prevent the creation of a health hazard, or be done with respirators selected and used in accordance with (9)(f) of this section. Welding, or the use of open flames near any solvent cleaning equipment shall be permitted only after such equipment has first been thoroughly cleared of solvents and vapors.

(12) Vapor degreasing tanks.

(a) In any vapor degreasing tank equipped with a condenser and vapor level thermostat, the condenser or thermostat shall keep the level of vapors below the top edge of the tank by a distance at least equal to one-half the tank width, or at least 36 inches, whichever is shorter.

(b) Where gas is used as a fuel for heating vapor degreasing tanks, the combustion chamber shall be of tight construction, except for such openings as the exhaust flue, and those that are necessary for supplying air for combustion. Flues shall be of corrosion-resistant construction and shall extend to the outer air. If mechanical exhaust is used on this flue, a draft diverter shall be used. Special precautions must be taken to prevent solvent fumes from entering the combustion air of this or any other heater when chlorinated or fluorinated

hydrocarbon solvents (for example, trichloroethylene; Freon) are used.

(c) Heating elements shall be so designed and maintained that their surface temperature will not cause the solvent or mixture to decompose, break down, or be converted into an excessive quantity of vapor.

(d) Tanks or machines of more than 4 square feet of vapor area, used for solvent cleaning or vapor degreasing, shall be equipped with suitable cleanout or sludge doors located near the bottom of each tank or still. These doors shall be so designed and gasketed that there will be no leakage of solvent when they are closed.

(13) Scope.

(a) This paragraph applies to all operations involving the immersion of materials in liquids, or in the vapors of such liquids, for the purpose of cleaning or altering their surfaces, or adding or imparting a finish thereto, or changing the character of the materials, and their subsequent removal from the liquids or vapors, draining, and drying. Such operations include washing, electroplating, anodizing, pickling, quenching, dyeing, dipping, tanning, dressing, bleaching, degreasing, alkaline cleaning, stripping, rinsing, digesting, and other similar operations, but do not include molten materials handling operations, or surface coating operations.

(b) "Molten materials handling operations" means all operations, other than welding, burning, and soldering operations, involving the use, melting, smelting, or pouring of metals, alloys, salts, or other similar substances in the molten state. Such operations also include heat treating baths, descaling baths, die casting stereotyping, galvanizing, tinning, and similar operations.

(c) "Surface coating operations" means all operations involving the application of protective, decorative, adhesive, or strengthening coating or impregnation to one or more surfaces, or into the interstices of any object or material, by means of spraying, spreading, flowing, brushing, roll coating, pouring, cementing, or similar means; and any subsequent draining or drying operations, excluding open-tank operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-11021, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-11021, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-11021, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-11021, filed 8/8/80; Order 73-3, § 296-62-11021, filed 5/7/73.]

WAC 296-62-130 Emergency washing facilities. (1) Definitions.

"Emergency washing facilities" means emergency showers, eyewashes, eye/face washes, hand-held drench hoses, or other similar units.

"Corrosive" is a substance that can cause destruction of living tissue by chemical action, including acids with a pH of 2.5 or below or caustics with a pH of 11.0 or above.

"Strong irritant" means a chemical that is not corrosive, but causes a strong temporary inflammatory effect on living tissue by chemical action at the site of contact.

"Toxic chemical" means a chemical that produces serious injury or illness by absorption through any body surface.

(2) Facilities required.

(a) What requirements apply to accessing emergency washing facilities?

- Emergency washing facilities must be readily available and accessible.
- To be readily available and accessible, emergency washing facilities must be free of obstruction and require no more than ten seconds to reach.
- The travel distance should be no farther than fifty feet (15.25 meters).

(b) What requirements apply to emergency showers?

- Emergency showers must be provided if there is a potential for substantial portions of the body to come into contact with corrosives, strong irritants, or toxic chemicals.
- The emergency showers must deliver water to cascade over the user's entire body at a minimum rate of twenty gallons (75.7 liters) per minute for fifteen minutes or more.

(c) What requirements apply to emergency eyewash?

- Emergency eyewash must be provided where there is the potential for an employee's eyes to be exposed to corrosives, strong irritants, or toxic chemicals.
- The emergency eyewash equipment must irrigate and flush both eyes simultaneously while the operator holds the eyes open.
- The on-off valve must be activated in one second or less and must remain on without the use of the operator's hands until intentionally turned off.
- The emergency eyewash equipment must deliver at least 0.4 gallons (1.5 liters) of water per minute for fifteen minutes or more.

(d) What requirements apply to personal eyewash equipment?

- Personal eyewash units are portable, supplementary units that support plumbed units or self-contained units, or both, by delivering immediate flushing for less than fifteen minutes.
- Such units must deliver potable water or other medically approved eye flushing solution.
- Personal eyewash equipment may be used to supplement emergency washing facilities, however, they must not be used as a substitute.

(e) What are the requirements for hand-held drench hoses?

- Hand-held drench hoses are single-headed emergency washing devices connected to a flexible hose and can be used to irrigate and flush the face or other parts of the body.
- Hand-held drench hoses may be used to supplement emergency washing facilities, however, they must not be used as a substitute.
- Hand-held drench hoses must deliver at least 3.0 gallons (11.4 liters) of water per minute for fifteen minutes or more.

(f) What periodic inspection requirements apply to plumbed and self-contained washing equipment?

- All plumbed emergency eyewash facilities and hand-held drench hoses must be activated weekly and inspected annually to ensure that they function correctly and that the quality and quantity of water is satisfactory for emergency washing purposes.
- Emergency showers must be activated and inspected annually to ensure that they function correctly and that the quality and quantity of water is satisfactory for emergency washing purposes.

- All self-contained eyewash equipment and personal eyewash equipment must be inspected and maintained according to manufacturer instructions. Inspections for proper operation must be done annually. Sealed personal eyewashes must be replaced after the manufacturer's expiration date.

Note: Most manufacturers recommend fluid replacement every six months in self-contained eyewashes. The ANSI Standard can be obtained from the American National Standards Institute, 1430 Broadway, New York, New York 10018.

(3) Potable water. All emergency washing facilities using nonpotable water must have signs stating the water is nonpotable.

Note: For further information on the design, installation, and maintenance of emergency washing facilities, see American National Standards Institute (ANSI) publication Z358.1 - 1998, Emergency Eyewash and Shower Equipment. Emergency washing facilities that are designed to meet ANSI Z358.1 - 1998 also meet the requirements of this standard. The ANSI Standard can be obtained from the American National Standards Institute, 1430 Broadway, New York, New York 10018.

[Statutory Authority: RCW 49.17.040, 99-07-063, § 296-62-130, filed 3/17/99, effective 6/17/99. Statutory Authority: RCW 49.17.040 and 49.17.050, 85-10-004 (Order 85-09), § 296-62-130, filed 4/19/85; Order 73-3, § 296-62-130, filed 5/7/73; Order 70-8, § 296-62-130, filed 7/31/70, effective 9/1/70; Rule 13.010, effective 8/1/63.]

WAC 296-62-141 Permit-required confined spaces.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-22-046, § 296-62-141, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14100 Scope and application. (1) Scope.

This part contains minimum requirements for practices and procedures to protect employees in all industries from the hazards of entry and/or work in permit-required confined spaces.

(2) Application. Part M (Permit-required confined spaces) applies to all employers under the jurisdiction of the Washington Industrial Safety and Health Act, chapter 49.17 RCW. Part M may be augmented by more protective requirements for confined spaces or areas in vertical standards. Certain industry specific vertical standards are more protective than chapter 296-62 WAC, Part M. Where there is a conflict between an industry specific vertical standard and chapter 296-62 WAC, Part M, the vertical standard will apply.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-22-046, § 296-62-14100, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14105 Definitions. "Acceptable entry conditions" means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

"Attendant" means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

"Authorized entrant" means an employee who is authorized by the employer to enter a permit space.

"Blanking or blinding" means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the

bore. It is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

"Confined space" means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (For example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- Is not designed for continuous employee occupancy.

"Double block and bleed" means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

"Emergency" means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

"Engulfment" means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be inhaled to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

"Entry" means the action by which a person passes through an opening into a permit-required confined space and includes work activities in that space. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Note: If the opening is large enough for the worker to fully enter the space a permit is required even for partial body entry. Permits are not required for partial body entry where the opening is not large enough for full entry, although other standards such as lockout-tagout or respiratory protection may apply.

"Entry permit (permit)" means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in WAC 296-62-14509.

"Entry supervisor" means the person (such as the employer, crew leader, or crew chief) responsible for:

- Determining if acceptable entry conditions are present at a permit space where entry is planned;
- Authorizing entry and overseeing entry operations; and
- Terminating entry as required by this part.

Note: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

"Hazardous atmosphere" means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of ten percent of its lower flammable limit (LFL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL;

Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of five feet (1.52 m) or less.

- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

- Atmospheric concentration of any substance which may exceed a permissible exposure limit is published in chapter 296-62 WAC, Parts F, G, H, and I, general occupational health standards;

Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

- Any other atmospheric condition that is immediately dangerous to life or health.

Note: For air contaminants for which WISHA has not determined a dose or permissible exposure limit, other sources of information, such as material safety data sheets that comply with the Hazard Communication Standard, chapter 296-62 WAC, Part C, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

"Hot work permit" means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

"Immediately dangerous to life or health (IDLH)" means any condition that:

- Poses an immediate or delayed threat to life; or
- Would cause irreversible adverse health effects; or
- Would interfere with an individual's ability to escape unaided from a permit space.

Note: Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

"Inerting" means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Note: This procedure produces an IDLH oxygen-deficient atmosphere.

"Isolation" means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: Blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

"Line breaking" means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

"Nonpermit confined space" means a confined space that does not contain any physical hazards or any actual or potential atmospheric hazards capable of causing death or serious physical harm.

"Oxygen deficient atmosphere" means an atmosphere containing less than 19.5 percent oxygen by volume.

"Oxygen enriched atmosphere" means an atmosphere containing more than 23.5 percent oxygen by volume.

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

"Permit-required confined space program (permit space program)" means the employer's overall program for:

- Controlling, and, where appropriate, for protecting employees from, permit space hazards; and
- Regulating employee entry into permit spaces.

"Permit system" means the employer's written procedure for:

- Preparing and issuing permits for entry; and
- Returning the permit space to service following termination of entry.

"Prohibited condition" means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

"Rescue service" means the personnel designated to rescue employees from permit spaces.

"Retrieval system" means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for nonentry rescue of persons from permit spaces.

"Testing" means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Note: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-22-046, § 296-62-14105, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14110 General requirements. (1) The employer must evaluate the workplace to determine if confined spaces are present. A confined space must be assumed to be a permit-required space unless it can be documented to be a nonpermit-confined space as required in subsection (2) of this section.

Note: Proper application of the decision flow chart in WAC 296-62-14171, Appendix A, would facilitate compliance with this requirement.

(2) A confined space may be classified as a nonpermit-confined space under the following conditions and procedures:

(a) If the confined space poses no actual or potential atmospheric hazards.

(b) If the confined space has no other recognized health or safety hazards including engulfment in solid or liquid material, electrical shock, or moving parts.

(c) If all hazards within the space are eliminated without entry into the space, the confined space may be classified as a nonpermit confined space for as long as the hazards remain eliminated.

(d) If it is necessary to enter the confined space to eliminate hazards, it must be assumed to be a permit space and such entry must be performed under WAC 296-62-14115 through 296-62-14150. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a nonpermit confined space for as long as the hazards remain eliminated.

Note: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards. Subsections (6) and (7) of this section cover permit space entry where the employer can demonstrate that forced air ventilation alone will control all hazards in the space.

(e) The employer must:

(i) Document that all hazards in a permit space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination.

(ii) Make the certification available to each employee entering the space or to that employee's authorized representative.

(f) When there are changes in the use or configuration of a nonpermit confined space that might increase the hazards to entrants, the employer must reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

(g) If hazards arise within a confined space that has been classified as a nonpermit space under this subsection, each employee in the space must exit the space. The employer must then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with chapter 296-62 WAC, Part M.

(3) If the workplace contains permit-required confined spaces, the employer must inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

Note: A sign reading "DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" or using other similar language would satisfy the requirement for a sign.

(4) If the employer decides that its employees will not enter permit spaces, the employer must:

- Take effective measures to prevent its employees from entering the permit spaces; and

- Comply with subsections (1), (3), and (8) of this section.

(5) If the employer decides that its employees will enter permit spaces, the employer must:

(a) Follow the procedures outlined in WAC 296-62-14115 through 296-62-14155; and

(b) Develop and implement a written permit space program that complies with this part; and

(c) Make the written program available for inspection by employees and their authorized representatives.

(6) An employer may use the alternate entry procedures specified in subsection (7) of this section for entering a permit space under the following conditions:

(a) The employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere;

(b) The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry;

(c) The employer develops or has monitoring and inspection data that supports the demonstrations required by (a) and (b) of this subsection;

(d) If an initial entry of the permit space is necessary to obtain the data required by (c) of this subsection, the entry must be performed in compliance with the permit required confined space procedures outlined in WAC 296-62-14115 through 296-62-14150; and

(e) The determinations and supporting data required by (a), (b), and (c) of this subsection are documented by the employer and are made available to each employee who enters the permit space or to that employee's authorized representative.

(7) Alternate procedures for entering permit confined spaces.

The following alternate procedures apply to entry into permit spaces that meet the conditions set forth in subsection (6) of this section.

(a) During permit space entry using these alternate procedures an employer need not comply with WAC 296-62-14115 through 296-62-14125 and WAC 296-62-14135 through 296-62-14150. Training and employee participation requirements of WAC 296-62-14130 and 296-62-14155 still apply.

(b) Any conditions making it unsafe to remove an entrance cover must be eliminated before the cover is removed.

(c) When entrance covers are removed, the opening must be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and will protect each employee working in the confined space from objects falling into the space.

(d) Before an employee enters the confined space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for the following conditions in the order given below:

Any employee who enters the space, or that employee's authorized representative, must be provided an opportunity to observe the preentry testing required by this paragraph.

(i) Oxygen content,

(ii) Flammable gases and vapors, and

(iii) Potential toxic air contaminants.

(e) There must be no hazardous atmosphere within the space whenever any employee is inside the space.

(f) Continuous forced air ventilation must be used, as follows:

(i) An employee must not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;

(ii) The forced air ventilation must:

• Be directed to ventilate the immediate areas where an employee is or will be present within the space; and

• Continue until all employees have left the space;

(iii) The air supply for the forced air ventilation must be from a clean source and may not increase the hazards in the space.

(g) The atmosphere within the space must be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the periodic testing required by this subsection.

(h) If a hazardous atmosphere is detected during entry:

(i) Each employee must leave the space immediately;

(ii) The space must be evaluated to determine how the hazardous atmosphere developed; and

(iii) Measures must be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

(i) The employer must verify that:

• The space is safe for entry; and

• The preentry measures required by (a), (b), and (c) of this subsection have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification is made before entry and available to each employee entering the space.

(8) When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer must:

(a) Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this standard;

(b) Inform the contractor of the hazards identified and the host employer's experience with each permit space to be entered;

(c) Inform the contractor of any precautions or procedures that the host employer requires for the protection of employees in or near permit spaces where contractor personnel will be working;

(d) Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by WAC 296-62-14115(11); and

(e) Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

(9) In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations must:

(a) Obtain any available information regarding permit space hazards and entry operations from the host employer;

(b) Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by WAC 296-62-14115(11); and

(c) Inform the host employer either through a debriefing or during the entry operation of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14110, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14115 Permit-required confined space program (permit space program). When the employer decides employees will enter a permit-required confined space, the employer must:

(1) Implement the measures necessary to prevent unauthorized entry;

(2) Identify and evaluate the hazards of permit spaces before employees enter them;

(3) Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

(a) Specify acceptable entry conditions;

(b) Provide each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces;

(c) Isolate the permit space;

(d) Purge, inert, flush, or ventilate the permit space as necessary to eliminate or control atmospheric hazards;

(e) Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards; and

(f) Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.

(4) Provide the following equipment (specified in (a) through (i) of this subsection) at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly:

(a) Testing and monitoring equipment needed to comply with subsection (5) of this section;

(b) Ventilating equipment needed to obtain acceptable entry conditions;

(c) Communications equipment necessary for compliance with WAC 296-62-14135(3) and 296-62-14140(5);

(d) Personal protective equipment when feasible engineering and work practice controls will not adequately protect employees;

(e) Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency;

(f) Barriers and shields as required by subsection (3)(d) of this section;

(g) Equipment, such as ladders, needed for safe entry and exit by authorized entrants;

(h) Rescue and emergency equipment needed to comply with subsection (9) of this section, except when the equipment is provided by rescue services; and

(i) Any other equipment necessary for safe entry into and rescue from permit spaces.

(5) Evaluate permit space conditions as follows when entry operations are conducted:

(a) Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin;

(b) If isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), preentry testing shall be performed to the extent feasible before entry is authorized. If entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working;

(c) Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations;

(d) When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors;

(e) Provide each authorized entrant or that employee's authorized representative an opportunity to observe the preentry and any subsequent testing or monitoring of permit spaces;

(f) Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate; and

(g) Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accord with this section.

Note: Atmospheric testing conducted in accordance with WAC 296-62-14172, Appendix B, would be considered as satisfying the requirements of this paragraph. For permit space operations in sewers, atmospheric testing conducted in accordance with Appendix B, as supplemented by WAC 296-62-14175, Appendix E, would be considered as satisfying the requirements of this subdivision.

(6) Provide at least one attendant outside the permit space into which entry is authorized during entry operations;

Note: Attendants may be assigned to monitor more than one permit space provided the duties described in WAC 296-62-14140 can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as the duties described in WAC 296-62-14140 can be effectively performed for each permit space that is monitored. However, it is important to assess if it is appropriate or possible to have multiple permit spaces monitored by a single attendant or have attendants stationed at a location outside the monitored permit space. Due to the variability of permit space work environments, the appropriateness of how a permit space is monitored should be tailored to the requirements of the permit space and the work being performed.

(7) If multiple spaces are to be monitored by a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant's responsibilities under WAC 296-62-14140;

(8) Designate the persons who are to have active roles (for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by WAC 296-62-14130;

(9) Develop and implement procedures for:

- Summoning rescue and emergency services;
- Rescuing entrants from permit spaces;

- Providing necessary emergency services to rescued employees; and
- Preventing unauthorized personnel from attempting a rescue;

(10) Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this part;

(11) Develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so they do not endanger each other;

(12) Develop and implement procedures (such as closing off a permit space and canceling the permit) to end the entry after entry operations have been completed;

(13) Review entry operations when the employer has reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized; and

Note: Examples of circumstances requiring the review of the permit space program are: Any unauthorized entry of a permit space, the detection of a permit space hazard not covered by the permit, the detection of a condition prohibited by the permit, the occurrence of an injury or near-miss during entry, a change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program.

(14) Review the permit space program, using the canceled permits retained under WAC 296-62-14120(6) within one year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

Note: Employers may perform a single annual review covering all entries performed during a twelve-month period. If no entry is performed during a twelve-month period, no review is necessary.

Note: WAC 296-62-14173, Appendix C, presents examples of permit space programs that are considered to comply with the requirements of WAC 296-62-14115.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14115, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14120 Permit system. (1) Before entry is authorized, the employer must document the completion of measures required by WAC 296-62-14115(3) by preparing an entry permit.

Note: WAC 296-62-14174, Appendix D, presents examples of permits whose elements are considered to comply with the requirements of this part.

(2) Before entry begins, the entry supervisor identified on the permit must sign the entry permit to authorize entry.

(3) The completed permit must be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that preentry preparations have been completed.

(4) The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit in accordance with WAC 296-62-14125(2).

(5) The entry supervisor must terminate entry and cancel the entry permit when:

(a) The entry operations covered by the entry permit have been completed; or

(b) A condition that is not allowed under the entry permit arises in or near the permit space.

(6) The employer must retain each canceled entry permit for at least one year to facilitate the review of the permit-required confined space program required by WAC 296-62-14115(14). Any problems encountered during an entry operation must be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14120, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14125 Required entry permit information. The entry permit that documents compliance with this standard and authorizes entry to a permit space must identify the following:

(1) The permit space to be entered;

(2) The purpose of the entry;

(3) The date and the authorized duration of the entry permit;

(4) The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;

Note: This requirement may be met by inserting a reference on the entry permit as to the means used, such as a roster or tracking system, to keep track of the authorized entrants within the permit space.

(5) The personnel, by name, currently serving as attendants;

(6) The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;

(7) The hazards of the permit space to be entered;

(8) The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;

Note: Those measures can include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.

(9) The acceptable entry conditions;

(10) The results of initial and periodic tests performed under WAC 296-62-14115(5), accompanied by the names or initials of the testers and by an indication of when the tests were performed;

(11) The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services;

(12) The communication procedures used by authorized entrants and attendants to maintain contact during the entry;

(13) Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this part;

(14) Any other necessary information, given the circumstances of the particular confined space, in order to ensure employee safety; and

(15) Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

Note: See WAC 296-62-14174, Appendix D, for a sample entry permit form.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14125, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14130 Training. (1) The employer must provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this standard.

(2) Training must be provided to each affected employee in the following instances:

(a) Before the employee is first assigned duties under this section;

(b) Before there is a change in assigned duties;

(c) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;

(d) Whenever the employer has reason to believe that:

- There are deviations from the permit space entry procedures required by WAC 296-62-14115(3); or

- There are inadequacies in the employee's knowledge or use of these procedures.

(3) The training must establish employee proficiency in the duties required by this standard and must introduce new or revised procedures, as necessary, for compliance with this part.

(4) The employer must certify that the training required by subsections (1) through (3) of this section has been accomplished. The certification must:

- Contain each employee's name, the signatures or initials of the trainers, and the dates of training;

- Be available for inspection by employees and their authorized representatives.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14130, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14135 Duties of authorized entrants. The employer must ensure that all authorized entrants:

(1) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

(2) Properly use equipment as required by WAC 296-62-14115(4);

(3) Communicate with the attendant as necessary to enable the attendant to:

- Monitor entrant status; and

- Alert entrants of the need to evacuate the space as required by WAC 296-62-14140(6);

(4) Alert the attendant whenever:

(a) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation; or

(b) The entrant detects a prohibited condition; and

(5) Exit from the permit space as quickly as possible whenever:

(a) An order to evacuate is given by the attendant or the entry supervisor;

(b) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;

(c) The entrant detects a prohibited condition; or

(d) An evacuation alarm is activated.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14135, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14140 Duties of attendants. The employer must ensure that each attendant:

(1) Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

(2) Is aware of possible behavioral effects of hazard exposure in authorized entrants;

(3) Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under WAC 296-62-14125(4) accurately identifies who is in the permit space;

(4) Remains outside the permit space during entry operations until relieved by another attendant;

Note: When the employer's permit entry program allows attendant entry for rescue, attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations as required by WAC 296-62-14150(1) and if they have been relieved as required by subsection (4) of this section.

(5) Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space under subsection (6) of this section;

(6) Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:

(a) If the attendant detects a prohibited condition;

(b) If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;

(c) If the attendant detects a situation outside the space that could endanger the authorized entrants; or

(d) If the attendant cannot effectively and safely perform all the duties required under this section;

(7) Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;

(8) Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

(a) Warn the unauthorized persons that they must stay away from the permit space;

(b) Tell the unauthorized persons that they must exit immediately if they have entered the permit space; and

(c) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;

(9) Performs nonentry rescues as specified by the employer's rescue procedure; and

(10) Performs no other duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14140, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14145 Duties of entry supervisors. The employer must ensure that each entry supervisor:

(1) Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

(2) Verifies, by checking:

- That the appropriate entries have been made on the permit;

- That all tests specified by the permit have been conducted; and

- That all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin;

(3) Terminates the entry and cancels the permit as required by WAC 296-62-14120(5);

(4) Verifies that rescue services are available and that the means for summoning them are operable;

(5) Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and

(6) Determines that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained. This determination must be made whenever responsibility for a permit space entry operation is transferred and at regular intervals dictated by the hazards and operations performed within space.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14145, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14150 Rescue and emergency services.

(1) An employer who designates rescue and emergency services, under WAC 296-62-14115(9) of this part must:

(a) Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified;

Note: What will be considered timely will vary according to the specific hazards involved in each entry. For example, chapter 296-62 WAC, Part E, Respiratory protection, requires that employers provide a standby person or persons capable of immediate action to rescue employee(s) wearing respiratory protection while in work areas defined as IDLH atmospheres.

(b) Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;

(c) Select a rescue team or service from those evaluated that:

(i) Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified;

(ii) Is equipped for and proficient in performing the needed rescue services;

(d) Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and

(e) Provide the rescue team or service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

Note: Nonmandatory WAC 296-62-14176, Appendix F, contains examples of criteria which employers can use in evaluating prospective rescue services.

(2) An employer whose employees have been designated to provide permit space rescue and emergency services must take the following measures.

(a) Provide affected employees with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train affected employees so they are proficient in the use of that PPE, at no cost to those employees;

(b) Train affected employees to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant, as provided by WAC 296-62-14130 and 296-62-14135;

(c) Train affected employees in basic first-aid and cardiopulmonary resuscitation (CPR). The employer must ensure that at least one member of the rescue team or service holding a current certification in first-aid and CPR is available; and

(d) Ensure that affected employees practice making permit space rescues at least once every twelve months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. These representative permit spaces must, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

(3) Nonentry rescue. To facilitate nonentry rescue, retrieval systems or methods must be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems must meet the following requirements.

(a) Each authorized entrant must use a chest or full-body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant.

(b) Wristlets may be used in lieu of the chest or full-body harness if the employer can demonstrate that the use of a chest or full-body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

(c) The other end of the retrieval line must be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.

(d) A mechanical device must be available to retrieve personnel from vertical type permit spaces more than five feet (1.52 m) deep.

(4) If an injured entrant is exposed to a substance for which a material safety data sheet (MSDS) or other similar written information is required to be kept at the worksite, that MSDS or written information must be made available to the medical facility treating the exposed entrant.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14150, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14155 Employee participation. (1) Employers must consult with affected employees and their authorized representatives on the development and imple-

mentation of all aspects of the permit space program required by WAC 296-62-14503.

(2) Employers must make available to affected employees and their authorized representatives all information required to be developed by this part.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14155, filed 10/29/99, effective 2/1/00.]

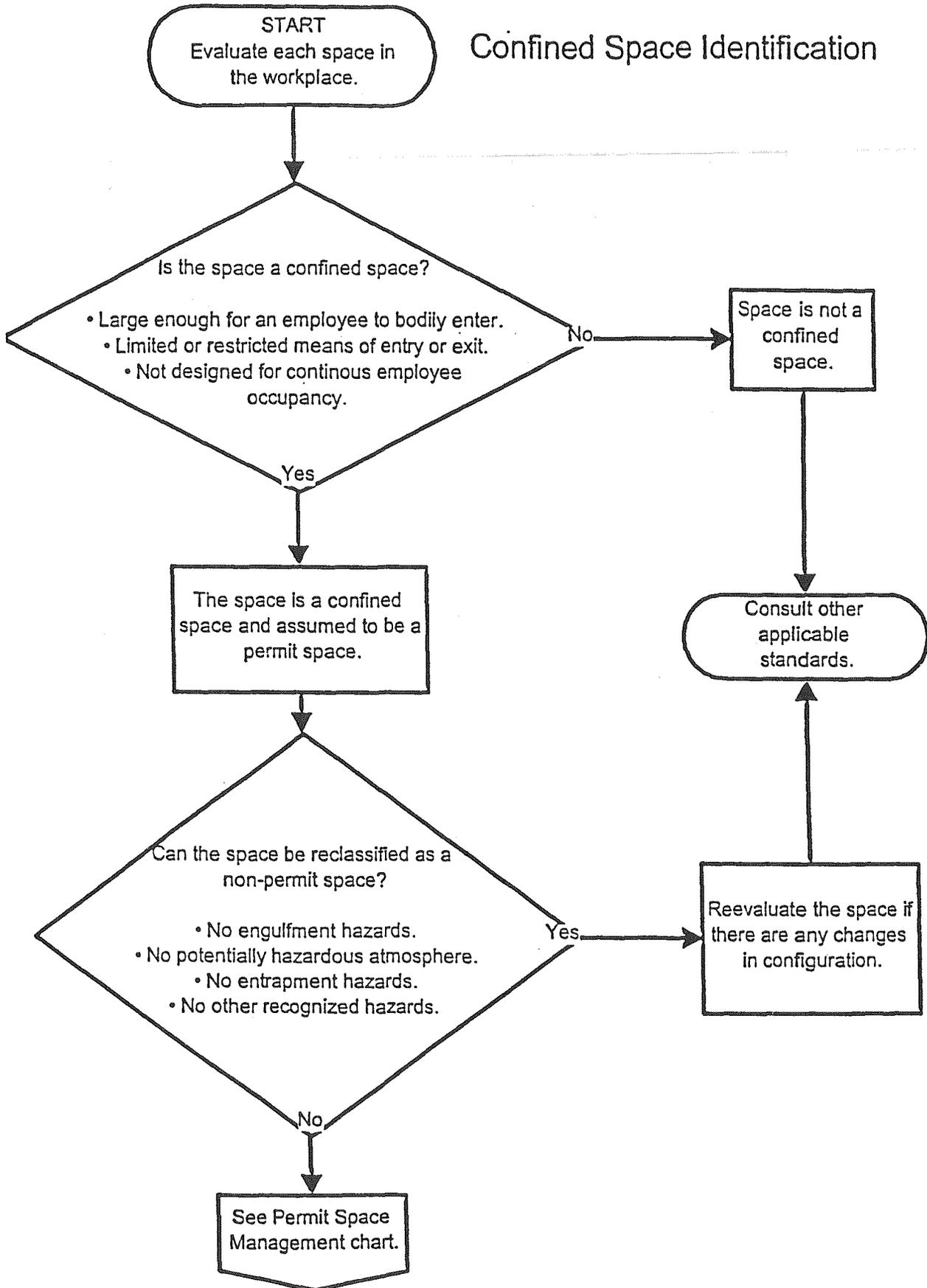
WAC 296-62-14170 Appendices to WAC 296-62-141—Permit-required confined spaces.

Note: Appendices A through F serve to provide information and nonmandatory guidelines to assist employers and employees in complying with the appropriate requirements of this part.

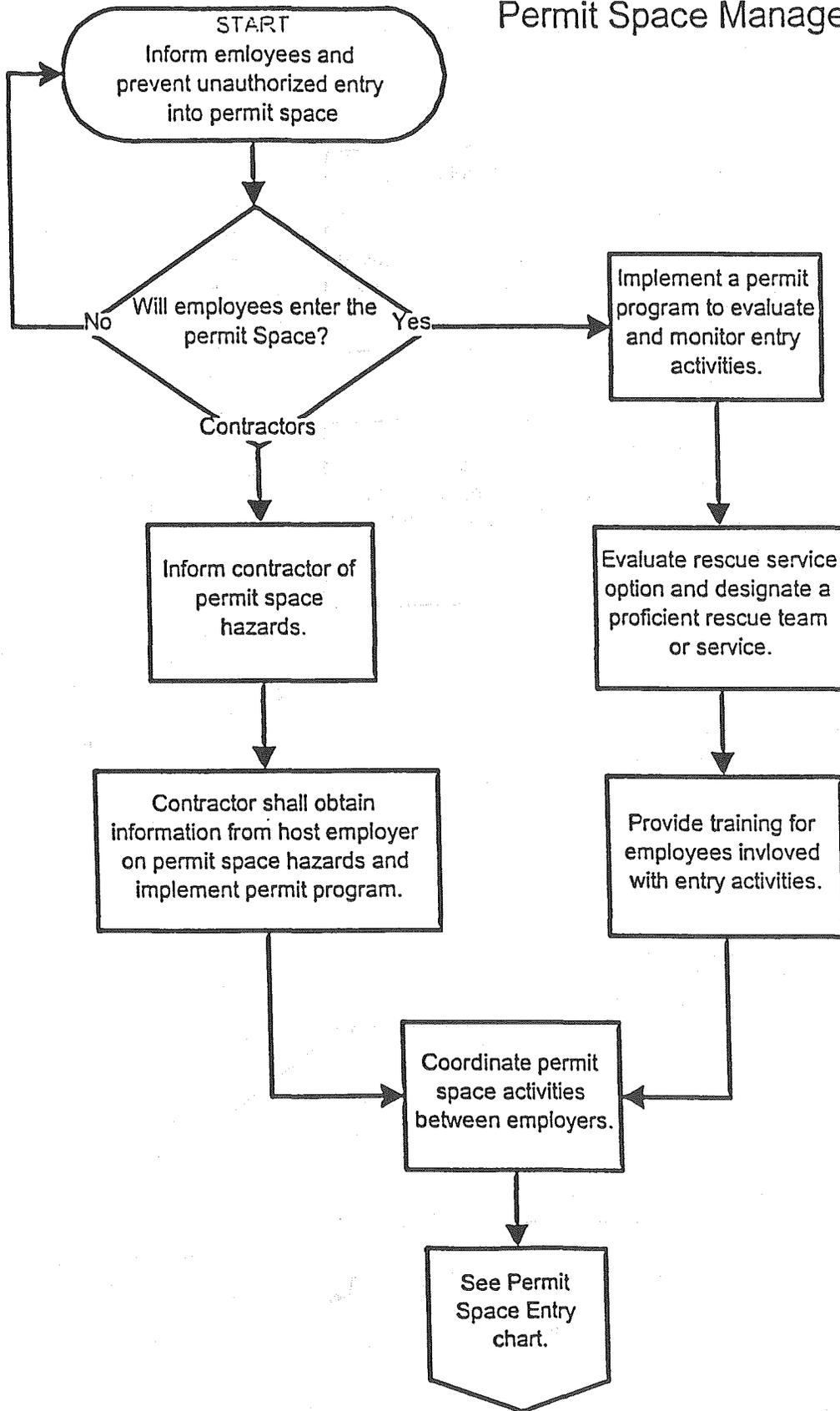
[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14170, filed 10/29/99, effective 2/1/00.]

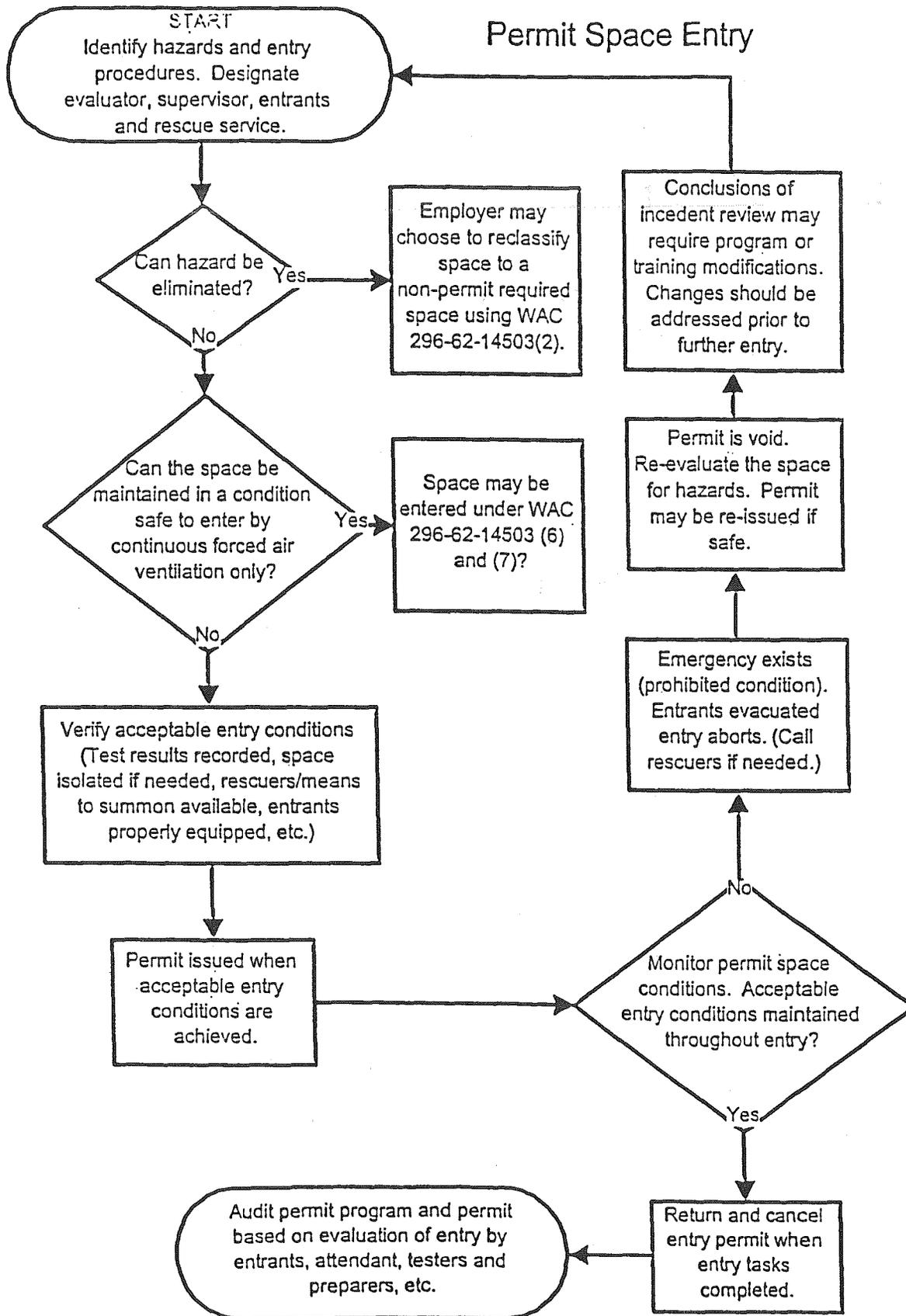
WAC 296-62-14171 Appendix A—Permit-required confined space decision flow chart.

Confined Space Identification



Permit Space Management





[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14171, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14172 Appendix B—Procedures for atmospheric testing. Atmospheric testing is required for two distinct purposes:

- Evaluation of the hazards of the permit space; and
- Verification that acceptable entry conditions into that space exist.

(1) Evaluation testing.

• The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space.

• Evaluation and interpretation of these data, and development of the entry procedure, should be done by, or reviewed by, a technically qualified professional (e.g., WISHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, certified marine chemist, etc.,) based on evaluation of all serious hazards.

(2) Verification testing.

• The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions.

• Results of testing (i.e., actual concentration, etc.,) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

(3) Duration of testing. Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.

(4) Testing stratified atmospheres.

• When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested a distance of approximately four feet (1.22 m) in the direction of travel and to each side.

• If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

(5) Order of testing.

• A test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere.

• Combustible gases are tested for next because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors.

• If tests for toxic gases and vapors are necessary, they are performed last.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14172, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14173 Appendix C—Examples of permit-required confined space programs. Example 1. Work-place. Sewer entry.

(1) Potential hazards. The employees could be exposed to the following:

(a) Engulfment.

(b) Presence of toxic gases. Equal to or more than 10 ppm hydrogen sulfide measured as an eight-hour time-weighted average. If the presence of other toxic contaminants is suspected, specific monitoring programs will be developed.

(c) Presence of explosive/flammable gases. Equal to or greater than ten percent of the lower flammable limit (LFL).

(d) Oxygen deficiency. A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

(2) Entry without permit/attendant:

(a) Certification.

• Sewers may be entered without the need for a written permit or attendant provided that the space can be maintained in a safe condition for entry by mechanical ventilation alone, as provided in WAC 296-62-14110(5).

• All sewers must be considered permit-required confined spaces until the preentry procedures demonstrate otherwise.

• Any employee required or permitted to precheck or enter a sewer must have successfully completed, as a minimum, the training as required by the following sections of these procedures.

• A written copy of operating and rescue procedures as required by these procedures must be at the worksite for the duration of the job.

• The sewer preentry checklist must be completed by the LEAD WORKER before entry into a sewer. This list verifies completion of items listed below. This checklist must be kept at the job site for duration of the job.

• If circumstances dictate an interruption in the work, the sewer must be reevaluated and a new checklist must be completed.

(b) Control of atmospheric and engulfment hazards.

(i) Pumps and lines.

• All pumps and lines which may reasonably cause contaminants to flow into the sewer must be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment.

• Not all laterals to sewers or storm drains require blocking. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected laterals must be blocked.

• If blocking and/or isolation requires entry into the sewer the provisions for entry into a permit-required confined space must be implemented.

(ii) Surveillance. The surrounding area must be surveyed to avoid hazards such as drifting vapors from the tanks, piping, or sewers.

(iii) Testing.

• The atmosphere within the sewer will be tested to determine whether dangerous air contamination and/or oxygen deficiency exists.

• Detector tubes, alarm only gas monitors and explosion meters are examples of monitoring equipment that may be used to test sewer atmospheres.

- Testing must be performed by a LEAD WORKER who has successfully completed the gas detector training for the monitoring method to be used.

- The minimum parameters to be monitored are oxygen deficiency, LFL, and hydrogen sulfide concentration.

- A written record of the preentry test results must be made and kept at the worksite for the duration of the job.

- The supervisor will certify in writing, based upon the results of the preentry testing, that all hazards have been eliminated or controlled.

- Affected employees must be able to review the testing results.

- The most hazardous conditions will govern when work is being performed in two adjoining, connecting spaces.

(c) Entry procedures. Entry into and work within may proceed if:

- There are no nonatmospheric hazards present;

- The preentry tests show there is no dangerous air contamination and/or oxygen deficiency within the space and there is no reason to believe that any is likely to develop;

- Continuous testing of the atmosphere in the immediate vicinity of the workers within the space is accomplished;

- Workers will immediately leave the sewer when any of the gas monitor alarm set points are reached as defined; and

- Workers will not return to the area until a SUPERVISOR who has completed the gas detector training has used a direct reading gas detector to evaluate the situation and has determined that it is safe to enter.

(d) Rescue. Arrangements for rescue services are not required for entries that do not require a permit. See the rescue portion of subsection (3), below, for instructions regarding rescue planning where an entry permit is required.

(3) Entry permit required.

(a) Entry permits.

- All sewers are considered permit-required confined spaces until the preentry procedures demonstrate otherwise.

- Any employee required or permitted to precheck or enter a sewer must have successfully completed, as a minimum, the training as required by the following sections of these procedures.

- A written copy of operating and rescue procedures as required by these procedures must be at the worksite for the duration of the job.

- The sewer entry permit must be completed before approval can be given to enter a sewer.

- The permit verifies completion of items listed below.

- The permit must be kept at the job site for the duration of the job.

- If circumstances cause an interruption in the work or a change in the alarm conditions for which entry was approved, a new sewer entry permit must be completed.

(b) Control of atmospheric and engulfment hazards.

(i) Surveillance. The surrounding area must be surveyed to avoid hazards such as drifting vapors from tanks, piping or sewers.

(ii) Testing.

- The sewer atmosphere must be tested to determine whether dangerous air contamination and/or oxygen deficiency exists.

- A direct reading gas monitor must be used.

- Testing must be performed by a SUPERVISOR who has successfully completed the gas detector training for the monitoring method used.

- The minimum parameters to be monitored are oxygen deficiency, LFL and hydrogen sulfide concentration.

- A written record of the preentry test results must be made and kept at the worksite for the duration of the job.

- Affected employees must be able to review the testing results.

- The most hazardous conditions will govern when work is being performed in two adjoining, connected spaces.

(iii) Space ventilation.

- Mechanical ventilation systems, where applicable, must be set at one hundred percent outside air.

- Where possible, open additional manholes to increase air circulation.

- Use portable blowers to augment natural circulation if needed.

- After a suitable ventilating period, repeat the testing.

- Entry may not begin until testing has demonstrated that the hazardous atmosphere has been eliminated or controlled.

(c) Entry procedures. Under any of the following conditions:

- Testing demonstrates the existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels;

- The atmosphere tests as safe but unsafe conditions can reasonably be expected to develop;

- It is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems and it is not practical or safe to deactivate such systems; or

- An emergency exists and it is not feasible to wait for preentry procedures to take effect.

The following procedures must be observed:

- All personnel must be trained.

- A self-contained breathing apparatus must be worn by any person entering the sewer.

- At least one worker must stand by the outside of the sewer ready to give assistance in case of emergency.

- The rescue workers must have a self-contained breathing apparatus available for immediate use.

- There must be at least one additional worker within sight or call of the standby worker.

- Continuous powered communications must be maintained between the worker within the sewer and standby personnel.

- If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response or a questionable response, the worker will be removed immediately from the sewer.

Exception: If the worker is disabled due to falling or impact, the worker must not be removed from the sewer unless there is immediate danger to the worker's life. Local rescue personnel must be notified immediately. The standby worker may not enter the sewer in this case, only trained rescue personnel (wearing self contained breathing apparatus) may enter to perform a rescue. A full-body harness with attached lifeline must be used by all workers entering the space with the free end of the line secured outside the entry opening. The standby worker must use the lifeline to attempt to rescue a disabled worker without entering the space and summon rescue services based on their assessment of the situation.

- When practical, the full-body harness must suspend a person upright and a hoisting device or similar apparatus must be available for lifting workers out of the sewer.

- In any situation where their use may endanger the worker, use of a hoisting device or full-body harness and attached lifeline may be discontinued.

- When dangerous air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment must be Class 1, Division 1 rated per National Electrical Code and no ignition sources may be introduced into the area.

- Continuous gas monitoring must be performed during all sewer entry operations. If alarm conditions occur, entry personnel must exit the sewer and a new sewer entry permit issued.

- Rescue. Call the local rescue services for rescue. Where immediate hazards to injured personnel are present, workers at the site must implement emergency procedures without entering the sewer. Rescue entries into sewers must be made only by trained and properly equipped personnel.

Example 2. Workplace. Meat and poultry rendering plants.

Cookers and dryers are either batch or continuous in their operation. Multiple batch cookers are operated in parallel. When one unit of a multiple set is shut down for repairs, means are available to isolate that unit from the others which remain in operation.

Cookers and dryers are horizontal, cylindrical vessels equipped with a center, rotating shaft and agitator paddles or discs. If the inner shell is jacketed, it is usually heated with steam at pressures up to 150 psig (1034.25 kPa). The rotating shaft assembly of the continuous cooker or dryer is also steam heated.

(1) Potential hazards. The recognized hazards associated with cookers and dryers are the risk that employees could be:

- (a) Struck or caught by rotating agitator;
- (b) Engulfed in raw material or hot, recycled fat;
- (c) Burned by steam from leaks into the cooker/dryer steam jacket or the condenser duct system if steam valves are not properly closed and locked out;
- (d) Burned by contact with hot metal surfaces, such as the agitator shaft assembly, or inner shell of the cooker/dryer;
- (e) Heat stress caused by warm atmosphere inside cooker/dryer;
- (f) Slipping and falling on grease in the cooker/dryer;
- (g) Electrically shocked by faulty equipment taken into the cooker/dryer;
- (h) Burned or overcome by fire or products of combustion; or
- (i) Overcome by fumes generated by welding or cutting done on grease covered surfaces.

(2) Permits.

- The supervisor in this case is always present at the cooker/dryer or other permit entry confined space when entry is made.

- The supervisor must follow the preentry isolation procedures described in the entry permit in preparing for entry, and ensure that the protective clothing, ventilating equipment and any other equipment required by the permit are at the entry site.

(3) Control of hazards. Mechanical.

- Lock out main power switch to agitator motor at main power panel.

- Affix tag to the lock to inform others that a permit entry confined space entry is in progress.

(4) Engulfment.

- Close all valves in the raw material blow line.

- Secure each valve in its closed position using chain and lock.

- Attach a tag to the valve and chain warning that a permit entry confined space entry is in progress.

- The same procedure must be used for securing the fat recycle valve.

(5) Burns and heat stress.

- Close steam supply valves to jacket and secure with chains and tags.

- Insert solid blank at flange in cooker vent line to condenser manifold duct system.

- Vent cooker/dryer by opening access door at discharge end and top center door to allow natural ventilation throughout the entry.

- If faster cooling is needed, use a portable ventilation fan to increase ventilation.

- Cooling water may be circulated through the jacket to reduce both outer and inner surface temperatures of cooker/dryers faster.

- Check air and inner surface temperatures in cooker/dryer to assure they are within acceptable limits before entering, or use proper protective clothing.

(6) Fire and fume hazards.

- Careful site preparation, such as cleaning the area within four inches (10.16 cm) of all welding or torch cutting operations, and proper ventilation are the preferred controls.

- All welding and cutting operations must be done in accordance with the requirements of chapter 296-24 WAC, Part I, Welding, cutting, and brazing.

- Proper ventilation may be achieved by local exhaust ventilation, or the use of portable ventilation fans, or a combination of the two practices.

(7) Electrical shock. Electrical equipment used in cooker/dryers must be in serviceable condition.

(8) Slips and falls. Remove residual grease before entering cooker/dryer.

(9) Attendant. The supervisor must be the attendant for employees entering cooker/dryers.

(10) Permit. The permit must specify how isolation must be done and any other preparations needed before making entry. This is especially important in parallel arrangements of cooker/dryers so that the entire operation need not be shut down to allow safe entry into one unit.

(11) Rescue. When necessary, the attendant must call the employer's trained rescue team or the local fire services as previously arranged.

Example 3. Workplace. Workplaces where tank cars, trucks, and trailers, dry-bulk tanks and trailers, railroad tank cars, and similar portable tanks are fabricated or serviced.

(1) During fabrication. These tanks and dry-bulk carriers are entered repeatedly throughout the fabrication process. These products are not configured identically, but the manufacturing processes by which they are made are very similar.

(a) Sources of hazards. In addition to the mechanical hazards arising from the risks that an entrant would be injured due to contact with components of the tank or the tools being used, there is also the risk that a worker could be injured by breathing fumes from welding materials or mists or vapors from materials used to coat the tank interior. In addition, many of these vapors and mists are flammable, so the failure to properly ventilate a tank could lead to a fire or explosion.

(b) Control of hazards.

(i) Welding. Local exhaust ventilation must be used to remove welding fumes once the tank or carrier is completed to the point that workers may enter and exit only through a manhole. (Follow the requirements of chapter 296-24 WAC, Part I, Welding, cutting and brazing, at all times.) Welding gas tanks may never be brought into a tank or carrier that is a permit entry confined space.

(ii) Application of interior coatings/linings.

- Atmospheric hazards must be controlled by forced air ventilation sufficient to keep the atmospheric concentration of flammable materials below ten percent of the lower flammable limit (LFL) (or lower explosive limit (LEL), whichever term is used locally).

- The appropriate respirators are provided and shall be used in addition to providing forced ventilation if the forced ventilation does not maintain acceptable respiratory conditions.

(c) Permits. Because of the repetitive nature of the entries in these operations, an "area entry permit" will be issued for a one-month period to cover those production areas where tanks are fabricated to the point that entry and exit are made using manholes.

(d) Authorization. Only the area supervisor may authorize an employee to enter a tank within the permit area. The area supervisor must determine that conditions in the tank trailer, dry-bulk trailer or truck, etc., meet permit requirements before authorizing entry.

(e) Attendant.

- The area supervisor must designate an employee to maintain communication by employer specified means with employees working in tanks to ensure their safety.

- The attendant may not enter any permit entry confined space to rescue an entrant or for any other reason, unless authorized by the rescue procedure and, and even then, only after calling the rescue team and being relieved by an attendant by another worker.

(f) Communications and observation.

- Communications between attendant and entrant(s) must be maintained throughout entry.

- Methods of communication that may be specified by the permit include voice, voice-powered radio, tapping or rapping codes on tank walls, signaling tugs on a rope, and the attendant's observation that work activities such as chipping, grinding, welding, spraying, etc., which require deliberate operator control continue normally.

- These activities often generate so much noise that the necessary hearing protection makes communication by voice difficult.

(g) Rescue procedures.

- Acceptable rescue procedures include entry by a team of employee-rescuers, use of public emergency services, and procedures for breaching the tank.

- The area permit specifies which procedures are available, but the area supervisor makes the final decision based on circumstances. (Certain injuries may make it necessary to breach the tank to remove a person rather than risk additional injury by removal through an existing manhole.

- However, the supervisor must ensure that no breaching procedure used for rescue would violate terms of the entry permit. For instance, if the tank must be breached by cutting with a torch, the tank surfaces to be cut must be free of volatile or combustible coatings within four inches (10.16 cm) of the cutting line and the atmosphere within the tank must be below the LFL.)

(h) Retrieval line and harnesses.

- The retrieval lines and harnesses generally required under this standard are usually impractical for use in tanks because the internal configuration of the tanks and their interior baffles and other structures would prevent rescuers from hauling out injured entrants.

- However, unless the rescue procedure calls for breaching the tank for rescue, the rescue team must be trained in the use of retrieval lines and harnesses for removing injured employees through manholes.

(2) Repair or service of "used" tanks and bulk trailers.

(a) Sources of hazards. In addition to facing the potential hazards encountered in fabrication or manufacturing, tanks or trailers which have been in service may contain residues of dangerous materials, whether left over from the transportation of hazardous cargoes or generated by chemical or bacterial action on residues of nonhazardous cargoes.

(b) Control of atmospheric hazards. A "used" tank must be brought into areas where tank entry is authorized only after the tank has been emptied, cleansed (without employee entry) of any residues, and purged of any potential atmospheric hazards.

(c) Welding. In addition to tank cleaning for control of atmospheric hazards, coating and surface materials must be removed four inches (10.16 cm) or more from any surface area where welding or other torch work will be done and care taken that the atmosphere within the tank remains well below the LFL. (Follow the requirements of chapter 296-24 WAC, Part I, Welding, cutting and brazing, at all times.)

(d) Permits.

- An entry permit valid for up to one year must be issued prior to authorization of entry into used tank trailers, dry-bulk trailers or trucks.

- In addition to the preentry cleaning requirement, this permit must require the employee safeguards specified for new tank fabrication or construction permit areas.

(e) Authorization.

- Only the area supervisor may authorize an employee to enter a tank trailer, dry-bulk trailer or truck within the permit area.

- The area supervisor must determine that the entry permit requirements have been met before authorizing entry.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14173, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14174, Appendix D, Sample A

Confined Space Entry Permit

Date & Time Issued: _____

Date & Time Expires: _____

Job Site/Space I.D.: _____

Job Supervisor: _____

Equipment to be worked on: _____

Work to be performed: _____

Stand-by personnel: _____

1. Atmospheric Checks:

Time	_____		
Oxygen	_____	%	
Explosives	_____	%L.F.L.	
Toxic	_____	PPM	

8. Entry, standby, and back up persons:

	Yes	No
Successfully completed required training?	()	()
Is it current?	()	()

2. Tester's signature _____

3. Source isolation (No Entry):

N/A	Yes	No
Pumps or lines blinded, disconnected, or blocked	()	()

9. Equipment:

N/A	Yes	No
Direct reading gas monitor-tested	()	()
Safety harnesses and lifelines for entry and standby persons	()	()
Hoisting equipment	()	()
Powered communications	()	()
SCBA's for entry and standby persons	()	()
Protective Clothing	()	()
All electric equipment listed Class I, Division I, Group D and Non-sparking tools	()	()

4. Ventilation Modification:

N/A	Yes	No
Mechanical	()	()
Natural Ventilation only	()	()

5. Atmospheric check after isolation and ventilation:

Oxygen	_____ %	>19.5%
Explosive	_____ %L.F.L.	<10%
Toxic	_____ PPM	<10 PPM I ₂ S
Time	_____	
Tester's signature	_____	

6. Communication procedures: _____

10. Periodic atmospheric tests:

Oxygen	_____ %	Time	_____	Oxygen	_____ %	Time	_____
Oxygen	_____ %	Time	_____	Oxygen	_____ %	Time	_____
Explosive	_____ %	Time	_____	Explosive	_____ %	Time	_____
Explosive	_____ %	Time	_____	Explosive	_____ %	Time	_____
Toxic	_____ %	Time	_____	Toxic	_____ %	Time	_____
Toxic	_____ %	Time	_____	Toxic	_____ %	Time	_____

7. Rescue procedures: _____

We have reviewed the work authorized by this permit and the information contained here-in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By: _____ (Supervisor)

Approved By: _____ (Unit Supervisor)

Reviewed By: _____ (Cs Operations Personnel)

(printed name)

(signature)

This permit to be kept at job site. Return job site copy to Safety Office following job completion.

Entrant Name:	Sign In	Sign Out	Sign In	Sign Out
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

WAC 296-62-14174, Appendix D, Sample B
Entry Permit

PERMIT VALID FOR 8 HOURS ONLY. ALL PERMIT COPIES REMAIN AT THE SITE UNTIL JOB COMPLETED.

DATE: - - - SITE LOCATION/DESCRIPTION _____

PURPOSE OF ENTRY _____

SUPERVISOR(S) in charge of crews. _____ Type of Crew _____ Phone # _____

COMMUNICATIONS PROCEDURES _____

RESCUE PROCEDURES (PHONE NUMBER AT BOTTOM) _____

BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED AND REVIEWED PRIOR TO ENTRY

REQUIREMENTS COMPLETED	DATE	TIME	REQUIREMENTS COMPLETED	DATE	TIME
LockOut/De-energize/Try-out	_____	_____	Full Body Harness w/ "D" ring	_____	_____
Line(s) Broken-Capped-Blank	_____	_____	Emergency Escape Retrieval Eq.	_____	_____
Purge-Flush and Vent	_____	_____	Lifelines	_____	_____
Ventilation	_____	_____	Fire Extinguishers	_____	_____
Secure Area (Post and Flag)	_____	_____	Lighting (Explosive Proof)	_____	_____
Breathing Apparatus	_____	_____	Protective Clothing	_____	_____
Resuscitator - Inhalator	_____	_____	Respirator(s) (Air Purifying)	_____	_____
Standby Safety Personnel	_____	_____	Burning and Welding Permit	_____	_____

Note: Items that do not apply enter N/A in the blank.

****RECORD CONTINUOUS MONITORING RESULTS EVERY 2 HOURS****

CONTINUOUS MONITORING**	Permissible	DATE	TIME	DATE	TIME
TEST(S) TO BE TAKEN	Entry Level	_____	_____	_____	_____
PERCENT OF OXYGEN	19.5% TO 23.5%	_____	_____	_____	_____
LOWER FLAMMABLE LIMIT	Under 10%	_____	_____	_____	_____
CARBON MONOXIDE	+35 PPM	_____	_____	_____	_____
Aromatic Hydrocarbon	+ 1PPM * 5 PPM	_____	_____	_____	_____
Hydrogen Cyanide	(Skin) * 4 PPM	_____	_____	_____	_____
Hydrogen Sulfide	+10 PPM * 15 PPM	_____	_____	_____	_____
Sulfur Dioxide	+2 PPM *5 PPM	_____	_____	_____	_____
Ammonia	*35 PPM	_____	_____	_____	_____

- * Short-term exposure limit: Employee can work in the area up to 15 minutes.
- * 8 hr. Time Weighted Avg. Employee can work in the area 8 hrs. (longer with appropriate respiratory protection).

REMARKS: _____

GAS TESTER NAME & CHECK # _____ INSTRUCTION(S) USED _____ MODEL &/OR TYPE _____ SERIAL &/OR UNIT # _____

SAFETY STANDBY PERSON IS REQUIRED FOR ALL CONFINED SPACE WORK
 SAFETY STANDBY PERSON(S) CHECK# _____ CONFINED SPACE ENTRANT(S) CHECK# _____ CONFINED SPACE ENTRANT(S) CHECK# _____

SUPERVISOR AUTHORIZATION - ALL CONDITIONS SATISFIED _____ DEPARTMENT/PHONE# _____
 AMBULANCE# _____ FIRE# _____ SAFETY# _____ GAS COORDINATOR# _____

Title 296 WAC: Labor and Industries, Department of

296-62-14174

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-22-046, § 296-62-14174, filed 10/29/99, effective 2/1/00.]

[2000 WAC Supp—page 1274]

WAC 296-62-14175 Appendix E—Sewer system entry. Sewer entry differs in three vital respects from other permit entries:

- There rarely exists any way to completely isolate the space (a section of a continuous system) to be entered;
- Because isolation is not complete, the atmosphere may suddenly and unpredictably become lethally hazardous (toxic, flammable or explosive) from causes beyond the control of the entrant or employer; and
- Experienced sewer workers are especially knowledgeable in entry and work in their permit spaces because of their frequent entries. Unlike other employments where permit space entry is a rare and exceptional event, sewer workers' usual work environment is a permit space.

(1) Adherence to procedure. The employer should designate as entrants only employees who are thoroughly trained in the employer's sewer entry procedures and who demonstrate that they follow these entry procedures exactly as prescribed when performing sewer entries.

(2) Atmospheric monitoring. Entrants should be trained in the use of, and be equipped with, atmospheric monitoring equipment which sounds an audible alarm, in addition to its visual readout, whenever one of the following conditions is encountered:

- Oxygen concentration less than 19.5 percent; flammable gas or vapor at ten percent or more of the lower flammable limit (LFL); or
- Hydrogen sulfide or carbon monoxide at or above 10 ppm or 35 ppm, respectively, measured as an eight-hour time-weighted average.

Atmospheric monitoring equipment needs to be calibrated according to the manufacturer's instructions. The oxygen sensor/broad range sensor is best suited for initial use in situations where the actual or potential contaminants have not been identified, because broad range sensors, unlike substance-specific sensors, enable employers to obtain an overall reading of the hydrocarbons (flammables) present in the space.

However, such sensors only indicate that a hazardous threshold of a class of chemicals has been exceeded. They do not measure the levels of contamination of specific substances. Therefore, substance-specific devices, which measure the actual levels of specific substances, are best suited for use where actual and potential contaminants have been identified.

The measurements obtained with substance-specific devices are of vital importance to the employer when decisions are made concerning the measures necessary to protect entrants (such as ventilation or personal protective equipment) and the setting and attainment of appropriate entry conditions. However, the sewer environment may suddenly and unpredictably change, and the substance-specific devices may not detect the potentially lethal atmospheric hazards which may enter the sewer environment.

(a) Although WISHA considers the information and guidance provided above to be appropriate and useful in most sewer entry situations, the department emphasizes that each employer must consider the unique circumstances, including the predictability of the atmosphere, of the sewer permit spaces in the employer's workplace in preparing for entry.

Only the employer can decide, based upon his or her knowledge of, and experience with permit spaces in sewer systems, what the best type of testing instrument may be for any specific entry operation.

(b) The selected testing instrument should be carried and used by the entrant in sewer line work to monitor the atmosphere in the entrant's environment, and in advance of the entrant's direction of movement, to warn the entrant of any deterioration in atmospheric condition. Where several entrants are working together in the same immediate location, one instrument, used by the lead entrant, is acceptable.

(3) Surge flow and flooding. Sewer crews should develop and maintain liaison, to the extent possible, with the local weather bureau and fire and emergency services in their area so that sewer work may be delayed or interrupted and entrants withdrawn whenever sewer lines might be suddenly flooded by rain or fire suppression activities, or whenever flammable or other hazardous materials are released into sewers during emergencies by industrial or transportation accidents.

(4) Special equipment. Entry into large bore sewers may require the use of special equipment. Such equipment might include such items as atmosphere monitoring devices with automatic audible alarms, escape self-contained breathing apparatus (ESCBAs) with at least ten minute air supply (or other NIOSH approved self-rescuer), and waterproof flashlights, and may also include boats and rafts, radios and rope stand-offs for pulling around bends and corners as needed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14175, filed 10/29/99, effective 2/1/00.]

WAC 296-62-14176 Appendix F—Rescue team or rescue service evaluation criteria. (1) This appendix provides guidance to employers in choosing an appropriate rescue service. It contains criteria that may be used to evaluate the capabilities both of prospective and current rescue teams. Before a rescue team can be trained or chosen, however, a satisfactory permit program, including an analysis of all permit-required confined spaces to identify all potential hazards in those spaces, must be completed. WISHA believes that compliance with all the provisions of chapter 296-62 WAC, Part M will enable employers to conduct permit space operations without recourse to rescue services in nearly all cases. However, experience indicates that circumstances will arise where entrants will need to be rescued from permit spaces. It is therefore important for employers to select rescue services or teams, either on-site or off-site, that are equipped and capable of minimizing harm to both entrants and rescuers if the need arises.

(2) For all rescue teams or services, the employer's evaluation should consist of two components:

- An initial evaluation, in which employers decide whether a potential rescue service or team is adequately trained and equipped to perform permit space rescues of the kind needed at the facility and whether such rescuers can respond in a timely manner; and

- A performance evaluation, in which employers measure the performance of the team or service during an actual or practice rescue.

For example, based on the initial evaluation, an employer may determine that maintaining an on-site rescue team will be more expensive than obtaining the services of an off-site team, without being significantly more effective, and decide to hire a rescue service. During a performance evaluation, the employer could decide, after observing the rescue service perform a practice rescue, that the service's training or preparedness was not adequate to effect a timely or effective rescue at his or her facility and decide to select another rescue service, or to form an internal rescue team.

(a) Initial evaluation.

(i) The employer should meet with the prospective rescue service to facilitate the evaluations required by WAC 296-62-14150 (1)(a) and (b).

- At a minimum, if an off-site rescue service is being considered, the employer must contact the service to plan and coordinate the evaluations required by the standard.

- Merely posting the service's number or planning to rely on the 911 emergency phone number to obtain these services at the time of a permit space emergency would not comply with WAC 296-62-14150(1).

(ii) The capabilities required of a rescue service vary with the type of permit spaces from which rescue may be necessary and the hazards likely to be encountered in those spaces. Answering the questions below will assist employers in determining whether the rescue service is capable of performing rescues in the permit spaces present at the employer's workplace.

(A) What are the needs of the employer with regard to response time (time for the rescue service to receive notification, arrive at the scene, and set up and be ready for entry)?

For example, if entry is to be made into an IDLH atmosphere, or into a space that can quickly develop an IDLH atmosphere (if ventilation fails or for other reasons), the rescue team or service would need to be standing by at the permit space. On the other hand, if the danger to entrants is restricted to mechanical hazards that would cause injuries (e.g., broken bones, abrasions) a response time of ten or fifteen minutes might be adequate.

(B) How quickly can the rescue team or service get from its location to the permit spaces from which rescue may be necessary?

Relevant factors to consider would include:

- The location of the rescue team or service relative to the employer's workplace;

- The quality of roads and highways to be traveled, potential bottlenecks or traffic congestion that might be encountered in transit;

- The reliability of the rescuer's vehicles; and

- The training and skill of its drivers.

(C) What is the availability of the rescue service?

- Is it unavailable at certain times of the day or in certain situations?

- What is the likelihood that key personnel of the rescue service might be unavailable at times?

- If the rescue service becomes unavailable while an entry is underway, does it have the capability of notifying the employer so that the employer can instruct the attendant to abort the entry immediately?

(D) Does the rescue service meet all the requirements of WAC 296-62-14150(2) of the standard?

- If not, has it developed a plan that will enable it to meet those requirements in the future?

- If so, how soon can the plan be implemented?

(E) For off-site services, is the service willing to perform rescues at the employer's workplace? (An employer may not rely on a rescuer who declines, for whatever reason, to provide rescue services.)

(F) Is an adequate method for communications between the attendant, employer and prospective rescuer available so that a rescue request can be transmitted to the rescuer without delay? How soon after notification can a prospective rescuer dispatch a rescue team to the entry site?

(G) For rescues into spaces that may pose significant atmospheric hazards and from which rescue entry, patient packaging and retrieval cannot be safely accomplished in a relatively short time (fifteen to twenty minutes), employers should consider using airline respirators (with escape bottles) for the rescuers and to supply rescue air to the patient. If the employer decides to use SCBA, does the prospective rescue service have an ample supply of replacement cylinders and procedures for rescuers to enter and exit (or be retrieved) well within the SCBA's air supply limits?

(H) If the space has a vertical entry over five feet in depth, can the prospective rescue service properly perform entry rescues? Does the service have the technical knowledge and equipment to perform rope work or elevated rescue, if needed?

(I) Does the rescue service have the necessary skills in medical evaluation, patient packaging and emergency response?

(J) Does the rescue service have the necessary equipment to perform rescues, or must the equipment be provided by the employer or another source?

(b) Performance evaluation.

Rescue services are required by WAC 296-62-14150 (2)(c) of the standard to practice rescues at least once every twelve months, provided that the team or service has not successfully performed a permit space rescue within that time. As part of each practice session, the service should perform a critique of the practice rescue, or have another qualified party perform the critique, so that deficiencies in procedures, equipment, training, or number of personnel can be identified and corrected. The results of the critique, and the corrections made to respond to the deficiencies identified, should be given to the employer to enable it to determine whether the rescue service can quickly be upgraded to meet the employer's rescue needs or whether another service must be selected. The following questions will assist employers and rescue teams and services evaluate their performance.

(i) Have all members of the service been trained as permit space entrants, at a minimum, including training in the potential hazards of all permit spaces, or of representative permit spaces, from which rescue may be needed? Can team members recognize the signs, symptoms, and consequences of exposure to any hazardous atmospheres that may be present in those permit spaces?

(ii) Is every team member provided with, and properly trained in, the use and need for PPE, such as SCBA or fall

arrest equipment, which may be required to perform permit space rescues in the facility? Is every team member properly trained to perform his or her functions and make rescues, and to use any rescue equipment, such as ropes and backboards, that may be needed in a rescue attempt?

(iii) Are team members trained in the first aid and medical skills needed to treat victims overcome or injured by the types of hazards that may be encountered in the permit spaces at the facility?

(iv) Do all team members perform their functions safely and efficiently? Do rescue service personnel focus on their own safety before considering the safety of the victim?

(v) If necessary, can the rescue service properly test the atmosphere to determine if it is IDLH?

(vi) Can the rescue personnel identify information pertinent to the rescue from entry permits, hot work permits, and MSDSs?

(vii) Has the rescue service been informed of any hazards to personnel that may arise from outside the space, such as those that may be caused by future work near the space?

(viii) If necessary, can the rescue service properly package and retrieve victims from a permit space that has a limited size opening (less than twenty-four inches (60.9 cm) in diameter), limited internal space, or internal obstacles or hazards?

(ix) If necessary, can the rescue service safely perform an elevated (high angle) rescue?

(x) Does the rescue service have a plan for each of the kinds of permit space rescue operations at the facility? Is the plan adequate for all types of rescue operations that may be needed at the facility? Teams may practice in representative spaces, or in spaces that are "worst-case" or most restrictive with respect to internal configuration, elevation, and portal size. The following characteristics of a practice space should be considered when deciding whether a space is truly representative of an actual permit space:

(A) Internal configuration.

(I) Open — There are no obstacles, barriers, or obstructions within the space. One example is a water tank.

(II) Obstructed — The permit space contains some type of obstruction that a rescuer would need to maneuver around. An example would be a baffle or mixing blade. Large equipment, such as a ladder or scaffold, brought into a space for work purposes would be considered an obstruction if the positioning or size of the equipment would make rescue more difficult.

(B) Elevation.

(I) Elevated — A permit space where the entrance portal or opening is above grade by four feet or more. This type of space usually requires knowledge of high angle rescue procedures because of the difficulty in packaging and transporting a patient to the ground from the portal.

(II) Nonelevated — A permit space with the entrance portal located less than four feet above grade. This type of space will allow the rescue team to transport an injured employee normally.

(C) Portal size.

(I) Restricted — A portal of twenty-four inches or less in the least dimension. Portals of this size are too small to allow a rescuer to simply enter the space while using SCBA. The

portal size is also too small to allow normal spinal immobilization of an injured employee.

(II) Unrestricted — A portal of greater than twenty-four inches in the least dimension. These portals allow relatively free movement into and out of the permit space.

(D) Space access.

(I) Horizontal — The portal is located on the side of the permit space. Use of retrieval lines could be difficult.

(II) Vertical — The portal is located on the top of the permit space, so that rescuers must climb down, or the bottom of the permit space, so that rescuers must climb up to enter the space. Vertical portals may require knowledge of rope techniques, or special patient packaging to safely retrieve a downed entrant.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14176, filed 10/29/99, effective 2/1/00.]

WAC 296-62-145 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14500 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14501 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14503 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14505 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14507 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14509 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14511 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14513 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14515 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14517 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14519 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14520 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14521 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14523 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14525 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14527 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14529 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-14533 Cotton dust. (1) Scope and application.

(a) This section, in its entirety, applies to the control of employee exposure to cotton dust in all workplaces where employees engage in yarn manufacturing, engage in slashing and weaving operations, or work in waste houses for textile operations.

(b) This section does not apply to the handling or processing of woven or knitted materials; to maritime operations covered by chapters 296-56 and 296-304 WAC; to harvesting or ginning of cotton; or to the construction industry.

(c) Only subsection (8) Medical surveillance, subsection (11) (b) Medical surveillance, subsection (11)(c) Availability, subsection (11)(d) Transfer of records, and Appendices B, C, and D of this section apply in all work places where employees exposed to cotton dust engage in cottonseed processing or waste processing operations.

(d) This section applies to yarn manufacturing and slashing and weaving operations exclusively using washed cotton (as defined by subsection (14) of this section) only to the extent specified by subsection (14) of this section.

(e) This section, in its entirety, applies to the control of all employees exposure to the cotton dust generated in the preparation of washed cotton from opening until the cotton is thoroughly wetted.

(f) This section does not apply to knitting, classing or warehousing operations except that employers with these operations, if requested by WISHA, shall grant WISHA access to their employees and workplaces for exposure monitoring and medical examinations for purposes of a health study to be performed by WISHA on a sampling basis.

(2) Definitions applicable to this section:

(a) "Blow down" - the cleaning of equipment and surfaces with compressed air.

(b) "Blow off" - the use of compressed air for cleaning of short duration and usually for a specific machine or any portion of a machine.

(c) "Cotton dust" - dust present in the air during the handling or processing of cotton, which may contain a mixture of many substances including ground-up plant matter, fiber, bacteria, fungi, soil, pesticides, noncotton plant matter and other contaminants which may have accumulated with the cotton during the growing, harvesting and subsequent processing or storage periods. Any dust present during the han-

dling and processing of cotton through the weaving or knitting of fabrics, and dust present in other operations or manufacturing processes using raw or waste cotton fibers or cotton fiber byproducts from textile mills are considered cotton dust within this definition. Lubricating oil mist associated with weaving operations is not considered cotton dust.

(d) "Director" - the director of labor and industries or his authorized representative.

(e) "Equivalent instrument" - a cotton dust sampling device that meets the vertical elutriator equivalency requirements as described in subsection (4)(a)(iii) of this section.

(f) "Lint-free respirable cotton dust" - particles of cotton dust of approximately 15 microns or less aerodynamic equivalent diameter.

(g) "Vertical elutriator cotton dust sampler" or "vertical elutriator" - a dust sampler which has a particle size cut-off at approximately 15 microns aerodynamic equivalent diameter when operating at the flow rate of 7.4 ± 0.2 liters per minute.

(h) "Waste processing" - waste recycling (sorting, blending, cleaning and willowing) and garnetting.

(i) "Yarn manufacturing" - all textile mill operations from opening to, but not including, slashing and weaving.

(3) Permissible exposure limits and action levels.

(a) Permissible exposure limits (PEL).

(i) The employer shall assure that no employee who is exposed to cotton dust in yarn manufacturing and cotton washing operations is exposed to airborne concentrations of lint-free respirable cotton dust greater than $200 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(ii) The employer shall assure that no employee who is exposed to cotton dust in textile mill waste house operations or is exposed in yarn manufacturing to dust from "lower grade washed cotton" as defined in subsection (14)(e) of this section is exposed to airborne concentrations of lint-free respirable cotton dust greater than $500 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(iii) The employer shall assure that no employee who is exposed to cotton dust in the textile processes known as slashing and weaving is exposed to airborne concentrations of lint-free respirable cotton dust greater than $750 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(b) Action levels.

(i) The action level for yarn manufacturing and cotton washing operations is an airborne concentration of lint-free respirable cotton dust of $100 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(ii) The action level for waste houses for textile operations is an airborne concentration of lint-free respirable cotton dust of $250 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(iii) The action level for the textile processes known as slashing and weaving is an airborne concentration of lint-free respirable cotton dust of $375 \mu\text{g}/\text{m}^3$ mean concentration,

averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(4) Exposure monitoring and measurement.

(a) General.

(i) For the purposes of this section, employee exposure is that exposure which would occur if the employee were not using a respirator.

(ii) The sampling device to be used shall be either the vertical elutriator cotton dust sampler or an equivalent instrument.

(iii) If an alternative to the vertical elutriator cotton dust sampler is used, the employer shall establish equivalency by demonstrating that the alternative sampling devices:

(A) It collects respirable particulates in the same range as the vertical elutriator (approximately 15 microns);

(B) Replicate exposure data used to establish equivalency are collected in side-by-side field and laboratory comparisons; and

(C) A minimum of 100 samples over the range of 0.5 to 2 times the permissible exposure limit are collected, and ninety percent of these samples have an accuracy range of plus or minus twenty-five percent of the vertical elutriator reading with a ninety-five percent confidence level as demonstrated by a statistically valid protocol. (An acceptable protocol for demonstrating equivalency is described in Appendix E of this section.)

(iv) WISHA will issue a written opinion stating that an instrument is equivalent to a vertical elutriator cotton dust sampler if:

(A) A manufacturer or employer requests an opinion in writing and supplies the following information:

(I) Sufficient test data to demonstrate that the instrument meets the requirements specified in this paragraph and the protocol specified in Appendix E of this section;

(II) Any other relevant information about the instrument and its testing requested by WISHA; and

(III) A certification by the manufacturer or employer that the information supplied is accurate, and

(B) If WISHA finds, based on information submitted about the instrument, that the instrument meets the requirements for equivalency specified by this subsection.

(b) Initial monitoring. Each employer who has a place of employment within the scope of subsections (1)(a), (d) or (e) of this section shall conduct monitoring by obtaining measurements which are representative of the exposure of all employees to airborne concentrations of lint-free respirable cotton dust over an eight-hour period. The sampling program shall include at least one determination during each shift for each work area.

(c) Periodic monitoring.

(i) If the initial monitoring required by (4)(b) of this section or any subsequent monitoring reveals employee exposure to be at or below the permissible exposure limit, the employer shall repeat the monitoring for those employees at least annually.

(ii) If the initial monitoring required by (4)(b) of this section or any subsequent monitoring reveals employee exposure to be above the PEL, the employer shall repeat the monitoring for those employees at least every six months.

(iii) Whenever there has been a production, process, or control change which may result in new or additional exposure to cotton dust, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements for those employees affected by the change or increase.

(d) Employee notification.

(i) Within twenty working days after the receipt of monitoring results, the employer shall notify each employee in writing of the exposure measurements which represent that employee's exposure.

(ii) Whenever the results indicate that the employee's exposure exceeds the applicable permissible exposure limit specified in subsection (3) of this section, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure below the permissible exposure limit.

(5) Methods of compliance.

(a) Engineering and work practice controls. The employer shall institute engineering and work practice controls to reduce and maintain employee exposure to cotton dust at or below the permissible exposure limit specified in subsection (3) of this section, except to the extent that the employer can establish that such controls are not feasible.

(b) Whenever feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the permissible exposure limit, the employer shall nonetheless institute these controls to immediately reduce exposure to the lowest feasible level, and shall supplement these controls with the use of respirators which shall comply with the provisions of subsection (6) of this section.

(c) Compliance program.

(i) Where the most recent exposure monitoring data indicates that any employee is exposed to cotton dust levels greater than the permissible exposure limit, the employer shall establish and implement a written program sufficient to reduce exposures to or below the permissible exposure limit solely by means of engineering controls and work practices as required by (a) of this subsection.

(ii) The written program shall include at least the following:

(A) A description of each operation or process resulting in employee exposure to cotton dust;

(B) Engineering plans and other studies used to determine the controls for each process;

(C) A report of the technology considered in meeting the permissible exposure limit;

(D) Monitoring data obtained in accordance with subsection (4) of this section;

(E) A detailed schedule for development and implementation of engineering and work practice controls, including exposure levels projected to be achieved by such controls;

(F) Work practice program; and

(G) Other relevant information.

(iii) The employer's schedule as set forth in the compliance program, shall project completion of the implementation of the compliance program no later than March 27, 1984 or as soon as possible if monitoring after March 27, 1984

reveals exposures over the PEL, except as provided in (13)(b)(ii)(B) of this section.

(iv) The employer shall complete the steps set forth in his program by the dates in the schedule.

(v) Written programs shall be submitted, upon request, to the director, and shall be available at the worksite for examination and copying by the director, and any affected employee or their designated representatives.

(vi) The written programs required under subsection (5)(c) of this section shall be revised and updated at least every six months to reflect the current status of the program and current exposure levels.

(d) Mechanical ventilation. When mechanical ventilation is used to control exposure, measurements which demonstrate the effectiveness of the system to control exposure, such as capture velocity, duct velocity, or static pressure shall be made at reasonable intervals.

(6) Use of respirators.

(a) General. For employees who are required to use respirators by this section, the employer must provide respirators that comply with the requirements of this section. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering controls and work-practice controls;

(ii) Maintenance and repair activities for which engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limits;

(iv) Work operations specified under subsection (7)(a) of this section;

(v) Periods for which an employee requests a respirator.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(ii) Whenever a physician determines that an employee who works in an area in which the cotton-dust concentration exceeds the PEL is unable to use a respirator, including a powered air-purifying respirator, the employee must be given the opportunity to transfer to an available position, or to a position that becomes available later, that has a cotton-dust concentration at or below the PEL. The employer must ensure that such employees retain their current wage rate or other benefits as a result of the transfer.

(c) Respirator selection.

(i) The employer must select the appropriate respirator from Table 1 of this section.

TABLE - 1

Cotton dust concentration	Required respirator
Not greater than—	
(a) 5 x the applicable permissible exposure limit (PEL).	A disposable respirator with a particulate filter.
(b) 10 x the applicable PEL.	A quarter or half-mask respirator, other than a disposable respirator, equipped with particulate filters.

TABLE - 1

Cotton dust concentration	Required respirator
(c) 100 x the applicable PEL.	A full facepiece respirator equipped with high-efficiency particulate filters.
(d) Greater than 100 x the applicable PEL.	A powered air-purifying respirator equipped with high-efficiency particulate filters.

- Notes
1. A disposable respirator means the filter element is an inseparable part of the respirator.
 2. Any respirators permitted at higher environmental concentrations can be used at lower concentrations.
 3. Self-contained breathing apparatus are not required respirators but are permitted respirators.
 4. Supplied air respirators are not required but are permitted under the following conditions: Cotton dust concentration not greater than 10X the PEL—Any supplied air respirator; not greater than 100X the PEL—Any supplied air respirator with full facepiece, helmet or hood; greater than 100X the PEL—A supplied air respirator operated in positive pressure mode.

(ii) Whenever respirators are required by this section for cotton-dust concentrations that do not exceed the applicable permissible exposure limit by a multiple of 100 (100 x), the employer must, when requested by an employee, provide a powered air-purifying respirator with a high-efficiency particulate filter instead of the respirator specified in (a), (b), or (c) of Table 1 of this section.

(7) Work practices. Each employer shall, regardless of the level of employee exposure, immediately establish and implement a written program of work practices which shall minimize cotton dust exposure. The following shall be included where applicable:

(a) Compressed air "blow down" cleaning shall be prohibited, where alternative means are feasible. Where compressed air is used for cleaning, the employees performing the "blow down" or "blow off" shall wear suitable respirators. Employees whose presence is not required to perform "blow down" or "blow off" shall be required to leave the area affected by the "blow down" or "blow off" during this cleaning operation.

(b) Cleaning of clothing or floors with compressed air shall be prohibited.

(c) Floor sweeping shall be performed with a vacuum or with methods designed to minimize dispersal of dust.

(d) In areas where employees are exposed to concentrations of cotton dust greater than the permissible exposure limit, cotton and cotton waste shall be stacked, sorted, baled, dumped, removed or otherwise handled by mechanical means, except where the employer can show that it is infeasible to do so. Where infeasible, the method used for handling cotton and cotton waste shall be the method which reduces exposure to the lowest level feasible.

(8) Medical surveillance.

(a) General.

(i) Each employer covered by the standard shall institute a program of medical surveillance for all employees exposed to cotton dust.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician and are provided without cost to the employee.

(iii) Persons other than licensed physicians, who administer the pulmonary function testing required by this section

shall have completed a NIOSH approved training course in spirometry.

(b) Initial examinations. The employer shall provide medical surveillance to each employee who is or may be exposed to cotton dust. For new employees' this examination shall be provided prior to initial assignment. The medical surveillance shall include at least the following:

(i) A medical history;

(ii) The standardized questionnaire contained in WAC 296-62-14537; and

(iii) A pulmonary function measurement, including a determination of forced vital capacity (FVC) and forced expiratory volume in one second (FEV_1), the FEV_1/FVC ratio, and the percentage that the measured values of FEV_1 and FVC differ from the predicted values, using the standard tables in WAC 296-62-14539. These determinations shall be made for each employee before the employee enters the workplace on the first day of the work week, preceded by at least thirty-five hours of no exposure to cotton dust. The tests shall be repeated during the shift, no less than four hours and no more than ten hours after the beginning of the work shift; and, in any event, no more than one hour after cessation of exposure. Such exposure shall be typical of the employee's usual workplace exposure. The predicted FEV_1 and FVC for blacks shall be multiplied by 0.85 to adjust for ethnic differences.

(iv) Based upon the questionnaire results, each employee shall be graded according to Schilling's byssinosis classification system.

(c) Periodic examinations.

(i) The employer shall provide at least annual medical surveillance for all employees exposed to cotton dust above the action level in yarn manufacturing, slashing and weaving, cotton washing and waste house operations. The employer shall provide medical surveillance at least every two years for all employees exposed to cotton dust at or below the action level, for all employees exposed to cotton dust from washed cotton (except from washed cotton defined in subsection (9)(c) of this section), and for all employees exposed to cotton dust in cottonseed processing and waste processing operations. Periodic medical surveillance shall include at least an update of the medical history, standardized questionnaire (Appendix B-111), Schilling byssinosis grade, and the pulmonary function measurements in (b)(iii) of this subsection.

(ii) Medical surveillance as required in (c)(i) of this subsection shall be provided every six months for all employees in the following categories:

(A) An FEV_1 of greater than eighty percent of the predicted value, but with an FEV_1 decrement of five percent or 200 ml. on a first working day;

(B) An FEV_1 of less than eighty percent of the predicted value; or

(C) Where, in the opinion of the physician, any significant change in questionnaire findings, pulmonary function results, or other diagnostic tests have occurred.

(iii) An employee whose FEV_1 is less than sixty percent of the predicted value shall be referred to a physician for a detailed pulmonary examination.

(iv) A comparison shall be made between the current examination results and those of previous examinations and a

determination made by the physician as to whether there has been a significant change.

(d) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this regulation and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The employee's exposure level or anticipated exposure level;

(iv) A description of any personal protective equipment used or to be used; and

(v) Information from previous medical examinations of the affected employee which is not readily available to the examining physician.

(e) Physician's written opinion.

(i) The employer shall obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:

(A) The results of the medical examination and tests including the FEV_1 , FVC, and FEV_1/FVC ratio;

(B) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to cotton dust;

(C) The physician's recommended limitations upon the employee's exposure to cotton dust or upon the employee's use of respirators including a determination of whether an employee can wear a negative pressure respirator, and where the employee cannot, a determination of the employee's ability to wear a powered air purifying respirator; and

(D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(ii) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposure.

(9) Employee education and training.

(a) Training program.

(i) The employer shall provide a training program for all employees exposed to cotton dust and shall assure that each employee is informed of the following:

(A) The acute and long term health hazards associated with exposure to cotton dust;

(B) The names and descriptions of jobs and processes which could result in exposure to cotton dust at or above the PEL.

(C) The measures, including work practices required by subsection (7) of this section, necessary to protect the employee from exposures in excess of the permissible exposure limit;

(D) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by subsection (6) of this section and chapter 296-62 WAC, Part E (see WAC 296-62-07117, 296-62-07172, and 296-62-01786 through 296-62-07190);

(E) The purpose for and a description of the medical surveillance program required by subsection (8) of this section

and other information which will aid exposed employees in understanding the hazards of cotton dust exposure; and

(F) The contents of this standard and its appendices.

(ii) The training program shall be provided prior to initial assignment and shall be repeated annually for each employee exposed to cotton dust, when job assignments or work processes change and when employee performance indicates a need for retraining.

(b) Access to training materials.

(i) Each employer shall post a copy of this section with its appendices in a public location at the workplace, and shall, upon request, make copies available to employees.

(ii) The employer shall provide all materials relating to the employee training and information program to the director upon request.

(10) Signs. The employer shall post the following warning sign in each work area where the permissible exposure limit for cotton dust is exceeded:

WARNING
COTTON DUST WORK AREA
MAY CAUSE ACUTE OR DELAYED LUNG INJURY
(BYSSINOSIS)
RESPIRATORS REQUIRED IN THIS AREA

(11) Recordkeeping.

(a) Exposure measurements.

(i) The employer shall establish and maintain an accurate record of all measurements required by subsection (4) of this section.

(ii) The record shall include:

(A) A log containing the items listed in WAC 296-62-14535 (4)(a), and the dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;

(B) The type of protective devices worn, if any, and length of time worn; and

(C) The names, social security number, job classifications, and exposure levels of employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least twenty years.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate medical record for each employee subject to medical surveillance required by subsection (8) of this section.

(ii) The record shall include:

(A) The name and social security number and description of the duties of the employee;

(B) A copy of the medical examination results including the medical history, questionnaire response, results of all tests, and the physician's recommendation;

(C) A copy of the physician's written opinion;

(D) Any employee medical complaints related to exposure to cotton dust;

(E) A copy of this standard and its appendices, except that the employer may keep one copy of the standard and the appendices for all employees, provided that he references the standard and appendices in the medical surveillance record of each employee; and

(F) A copy of the information provided to the physician as required by subsection (8)(d) of this section.

(iii) The employer shall maintain this record for at least twenty years.

(c) Availability.

(i) The employer shall make all records required to be maintained by subsection (11) of this section available to the director for examination and copying.

(ii) Employee exposure measurement records and employee medical records required by this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with WAC 296-62-05201 through 296-62-05209 and 296-62-05213 through 296-62-05217.

(d) Transfer of records.

(i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by subsection (11) of this section.

(ii) Whenever the employer ceases to do business, and there is no successor employer to receive and retain the records for the prescribed period, these records shall be transmitted to the director.

(iii) At the expiration of the retention period for the records required to be maintained by this section, the employer shall notify the director at least three months prior to the disposal of such records and shall transmit those records to the director if he requests them within that period.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in WAC 296-62-05215.

(12) Observation of monitoring.

(a) The employer shall provide affected employees or their designated representatives an opportunity to observe any measuring or monitoring of employee exposure to cotton dust conducted pursuant to subsection (4) of this section.

(b) Whenever observation of the measuring or monitoring of employee exposure to cotton dust requires entry into an area where the use of personal protective equipment is required, the employer shall provide the observer with and assure the use of such equipment and shall require the observer to comply with all other applicable safety and health procedures.

(c) Without interfering with the measurement, observers shall be entitled to:

(i) An explanation of the measurement procedures;

(ii) An opportunity to observe all steps related to the measurement of airborne concentrations of cotton dust performed at the place of exposure; and

(iii) An opportunity to record the results obtained.

(13) Washed cotton.

(a) Exemptions. Cotton, after it has been washed by the processes described in this section is exempt from all or parts of this section as specified if the requirements of this section are met.

(b) Initial requirements.

(i) In order for an employer to qualify as exempt or partially exempt from this standard for operations using washed cotton, the employer must demonstrate that the cotton was washed in a facility which is open to inspection by the director and the employer must provide sufficient accurate docu-

mentary evidence to demonstrate that the washing methods utilized meet the requirements of this section.

(ii) An employer who handles or processes cotton which has been washed in a facility not under the employer's control and claims an exemption or partial exemption under this paragraph, must obtain from the cotton washer and make available at the worksite, to the director, or his designated representative, to any affected employee, or to their designated representative the following:

(A) A certification by the washer of the cotton of the grade of cotton, the type of washing process, and that the batch meets the requirements of this section:

(B) Sufficient accurate documentation by the washer of the cotton grades and washing process; and

(C) An authorization by the washer that the director may inspect the washer's washing facilities and documentation of the process.

(c) Medical and dyed cotton. Medical grade (USP) cotton, cotton that has been scoured, bleached and dyed, and mercerized yarn shall be exempt from all provisions of this standard.

(d) Higher grade washed cotton. The handling or processing of cotton classed as "low middling light spotted or better" which has been washed:

(i) On a continuous batt system or a rayon rinse system.

(ii) With water,

(iii) At a temperature of no less than 60°C,

(iv) With a water-to-fiber ratio of no less than 40:1, and

(v) With bacterial levels in the wash water controlled to limit bacterial contamination of the cotton, shall be exempt from all provisions of the standard except the requirements of subsection (8) Medical surveillance, subsection (11)(b) Medical surveillance, subsection (11)(c) Availability, subsection (11)(d) Transfer of records, and Appendices B, C, and D of this section.

(e) Lower grade washed cotton. The handling and processing of cotton of grades lower than "low middling light spotted," that has been washed as specified in (d) of this subsection and has also been bleached, shall be exempt from all provisions of the standard except the requirements of subsection (3)(a) Permissible exposure limits, subsection (4) Exposure monitoring and measurement, subsection (8) Medical surveillance, subsection (11) Recordkeeping, and Appendices B, C and D of this section.

(f) Mixed grades of washed cotton. If more than one grade of washed cotton is being handled or processed together, the requirements of the grade with the most stringent exposure limit, medical and monitoring requirements shall be followed.

(14) Appendices.

(a) Appendix B (B-I, B-II and B-III), WAC 296-62-14537, Appendix C, WAC 296-62-14539 and Appendix D, WAC 296-62-14541 are incorporated as part of this chapter and the contents of these appendices are mandatory.

(b) Appendix A of this chapter, WAC 296-62-14535 contains information which is not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

(c) Appendix E of this chapter is a protocol which may be followed in the validation of alternative measuring devices

as equivalent to the vertical elutriator cotton dust sampler. Other protocols may be used if it is demonstrated that they are statistically valid, meet the requirements in subsection (4)(a)(iii) of this section, and are appropriate for demonstrating equivalency.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-14533, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-14533, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-14533, filed 7/25/86; 82-03-023 (Order 82-1), § 296-62-14533, filed 1/15/82. Statutory Authority: 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-14533, filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-14533, filed 11/13/80.]

WAC 296-62-20011 Respiratory protection. (1) General.

For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this section. Compliance with the permissible exposure limit may not be achieved by the use of respirators except during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations, such as maintenance and repair activity, for which engineering and work-practice controls are technologically not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limit;

(d) Emergencies.

(2) Respirator program. The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(3) Respirator selection. The employer must select appropriate respirators or combination of respirators from Table I of this section.

TABLE I
RESPIRATORY PROTECTION FOR COKE
OVEN EMISSIONS

Airborne concentration of coke oven emissions	Required respirator
(i) Any concentration.	(A) A Type C supplied air respirator operated in pressure demand or other positive pressure or continuous flow mode; or
	(B) A powered air-purifying particulate filter respirator for dust, mist, and fume; or
	(C) A powered air-purifying particulate filter respirator combination chemical cartridge and particulate filter respirator for coke oven emissions.

TABLE I
RESPIRATORY PROTECTION FOR COKE
OVEN EMISSIONS

Airborne concentration of coke oven emissions	Required respirator
(ii) Concentrations not greater than 1500 µg/m ³ .	(A) Any particulate filter respirator for dust, mist and fume, except single-use respirator; or (B) Any particulate filter respirator or combination chemical cartridge and particulate filter respirator for coke oven emissions; or (C) Any respirator listed in subsection (2)(a)(i) of this section.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-20011, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-20011, filed 7/25/86. Statutory Authority: 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-20011, filed 7/27/81; Order 77-14, § 296-62-20011, filed 7/25/77.]

WAC 296-62-20017 Medical surveillance. (1) General requirements.

(a) Each employer shall institute a medical surveillance program for all employees who are employed in the regulated areas at least 30 days per year.

(b) This program shall provide each employee covered under subsection (1)(a) of this section with an opportunity for medical examinations in accordance with this section.

(c) The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a signed statement from the employee indicating that the employee understands the risk involved in the refusal to be examined.

(d) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and are provided without cost to the employee.

(2) Initial examinations. At the time of initial assignment to a regulated area or upon the institution of the medical surveillance program, the employer shall provide a medical examination including at least the following elements:

(a) A work history and medical history which shall include smoking history and the presence and degree of respiratory symptoms, such as breathlessness, cough, sputum production, and wheezing;

(b) A 14" x 17" posterior-anterior chest x-ray and International Labour Office UICC/Cincinnati (ILO U/C) rating;

(c) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at one second (FEV 1.0) with recording of type of equipment used;

(d) Weight;

(e) A skin examination;

(f) Urinalysis for sugar, albumin, and hematuria; and

(g) A urinary cytology examination.

(3) Periodic examinations.

(a) The employer shall provide the examinations specified in subsections (2)(a)-(f) of this section at least annually for employees covered under subsection (1)(a) of this section.

(b) The employer shall provide the examinations specified in subsection (2)(a) and (c)-(g) of this section at least semi-annually for employees 45 years of age or older or with five or more years employment in the regulated area.

(c) Whenever an employee who is 45 years of age or older or with five or more years employment in the regulated area transfers or is transferred from employment in a regulated area, the employer shall continue to provide the examinations specified in subsections (2)(a) and (c)-(g) of this section semi-annually, as long as that employee is employed by the same employer or a successor employer.

(d) The employer shall provide the x-ray specified in subsection (2)(b) of this section at least annually for employees covered under this subsection.

(e) Whenever an employee has not taken the examination specified in subsections (3)(a)-(c) of this section within the six months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment.

(4) Information provided to the physician. The employer shall provide the following information to the examining physician:

(a) A copy of this regulation and its Appendixes;

(b) A description of the affected employee's duties as they relate to the employee's exposure;

(c) The employee's exposure level or anticipated exposure level;

(d) A description of any personal protective equipment used or to be used; and

(e) Information from previous medical examinations of the affected employee which is not readily available to the examining physician.

(5) Physician's written opinion.

(a) The employer shall obtain a written opinion from the examining physician which shall include:

(i) The results of the medical examinations;

(ii) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to coke oven emissions;

(iii) Any recommended limitations upon the employee's exposure to coke oven emissions or upon the use of protective clothing or equipment such as respirators; and

(iv) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further explanation or treatment.

(b) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure.

(c) The employer shall provide a copy of the written opinion to the affected employee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-20017, filed 8/17/99, effective 12/1/99; 98-02-030, § 296-62-20017, filed 12/31/97, effective 1/31/98; Order 77-14, § 296-62-20017, filed 7/25/77.]

WAC 296-62-20019 Employee information and training. (1) Training program.

(a) The employer shall institute a training program for employees who are employed in the regulated area and shall assure their participation.

(b) The training program shall be provided as of January 20, 1977, for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area.

(c) The training program shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

(d) The training program shall include informing each employee of:

(i) The information contained in the substance information sheet for coke oven emissions (Appendix A);

(ii) The purpose, proper use, and limitations of respiratory protective devices in addition to other information as required by chapter 296-62 WAC, Part E (see WAC 296-62-07117, 296-62-07172, and 296-62-07186 through 296-62-07190).

(iii) The purpose for and a description of the medical surveillance program required by WAC 296-62-20017 including information on the occupational safety and health hazards associated with exposure to coke oven emissions;

(iv) A review of all written procedures and schedules required under WAC 296-62-20009; and

(v) A review of this standard.

(2) Access to training materials.

(a) The employer shall make a copy of this standard and its appendixes readily available to all employees who are employed in the regulated area.

(b) The employer shall provide all materials relating to the employee information and training program to the director.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-20019, filed 5/4/99, effective 9/1/99; Order 77-14, § 296-62-20019, filed 7/25/77.]

WAC 296-62-20027 Appendix A—Coke oven emissions substance information sheet.

APPENDIX A COKE OVEN EMISSIONS SUBSTANCE INFORMATION SHEET

I. SUBSTANCE IDENTIFICATION

- (1) Substance: Coke oven emissions
- (2) Definition: The benzene-soluble fraction of total particulate matter present during the destructive distillation or carbonization of coal for the production of coke.
- (3) Permissible exposure limit: 150 micrograms per cubic meter of air determined as an average over an 8-hour period.
- (4) Regulated areas: Only employees authorized by your employer should enter a regulated area. The employer is

required to designate the following areas as regulated areas: the coke oven battery, including topside and its machinery, pushside and its machinery, and the screening station; and the wharf, the beehive ovens and machinery.

II. HEALTH HAZARD DATA

Exposure to coke oven emissions is a cause of lung cancer, and possibly kidney cancer, in humans. Although it does not have an excess number of skin cancer cases in humans, repeated skin contact with coke oven emissions should be avoided.

III. PROTECTIVE CLOTHING AND EQUIPMENT

- (1) Respirators: Respirators will be provided by your employer for routine use if your employer is in the process of implementing engineering and work practice controls or where engineering and work practice controls are not feasible or insufficient. You must wear respirators for nonroutine activities or in emergency situations where you are likely to be exposed to levels of coke oven emissions in excess of the permissible exposure limit. Since how well your respirator fits your face is very important, your employer is required to conduct fit tests to make sure the respirator seals properly when you wear it. These tests are simple and rapid and will be explained to you during your training sessions.
- (2) Protective clothing: Your employer is required to provide, and you must wear, appropriate, clean, protective clothing and equipment to protect your body from repeated skin contact with coke oven emissions and from the heat generated during the coking process. This clothing should include such items as jacket and pants and flame resistant gloves. Protective equipment should include face shield or vented goggles, protective helmets and safety shoes, insulated from hot surfaces where appropriate.

IV. HYGIENE FACILITIES AND PRACTICES

You must not eat, drink, smoke, chew gum or tobacco, or apply cosmetics in the regulated area, except that drinking water is permitted. Your employer is required to provide lunchrooms and other areas for these purposes.

Your employer is required to provide showers, washing facilities, and change rooms. If you work in a regulated area, you must wash your face, and hands before eating. You must shower at the end of the work shift. Do not take used protective clothing out of the change rooms without your employer's permission. Your employer is required to provide for laundering or cleaning of your protective clothing.

V. SIGNS AND LABELS

Your employer is required to post warning signs and labels for your protection. Signs must be posted in regulated areas. The signs must warn that a cancer hazard is present, that only authorized employees may enter the area, and that no smoking or eating is allowed. In regulated areas where coke oven

emissions are above the permissible exposure limit, the signs should also warn that respirators must be worn.

VI. MEDICAL EXAMINATIONS

If you work in a regulated area at least 30 days per year, your employer is required to provide you with a medical examination every year. The medical examination must include a medical history, a chest x-ray; pulmonary function test; weight comparison; skin examination; a urinalysis and a urine cytology exam for the early detection of urinary cancer. The urine cytology exam is only included in the initial exam until you are either forty-five years or older, or have five or more years employment in the regulated areas when the medical exams including this test, but excepting the x-ray exam, are to be given every six months; under these conditions, you are to be given an x-ray exam at least once a year. The examining physician will provide a written opinion to your employer containing the results of the medical exams. You should also receive a copy of this opinion.

VII. OBSERVATION OF MONITORING

Your employer is required to monitor your exposure to coke oven emissions and you are entitled to observe the monitoring procedure. You are entitled to receive an explanation of the measurement procedure, observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you must also be provided with and must wear the protective clothing and equipment.

VIII. ACCESS TO RECORDS

You or your representative are entitled to records of your exposure to coke oven emissions upon request to your employer. Your medical examination records can be furnished to your physician upon request to your employer.

IX. TRAINING AND EDUCATION

Additional information on all of these items plus training as to hazards of coke oven emissions and the engineering and work practice controls associated with your job will also be provided by your employer.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-20027, filed 8/17/99, effective 12/1/99; 99-10-071, § 296-62-20027, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-02-030, § 296-62-20027, filed 12/31/97, effective 1/31/98; Order 77-14, Appendix A (codified as WAC 296-62-20027), filed 7/25/77.]

WAC 296-62-20029 Appendix B—Industrial hygiene and medical surveillance guidelines.

APPENDIX B

INDUSTRIAL HYGIENE AND MEDICAL SURVEILLANCE GUIDELINES

I. INDUSTRIAL HYGIENE GUIDELINES

(1)

[2000 WAC Supp—page 1286]

Sampling. (Benzene-Soluble Fraction Total Particulate Matter.)

Samples collected should be full shift (8-hour) samples. Sampling should be done using a personal sampling pump with pulsation damper at a flow rate of 2 liters per minute. Samples should be collected on 0.8 micrometer pore size silver membrane filters (37 mm diameter) preceded by Gelman glass fiber type A filters encased in three-piece plastic (polystyrene) field monitor cassettes. The cassette face cap should be on and the plug removed. The rotameter should be checked every hour to ensure that proper flow rates are maintained.

A minimum of three full-shift samples should be collected for each job classification on each battery, at least one from each shift. If disparate results are obtained for particular job classification, sampling should be repeated. It is advisable to sample each shift on more than one day to account for environmental variables (wind, precipitation, etc.) which may affect sampling. Differences in exposures among different work shifts may indicate a need to improve work practices on a particular shift. Sampling results from different shifts for each job classification should not be averaged. Multiple samples from same shift may be used to calculate an average exposure for a particular job classification.

(2) Analysis.

(a) All extraction glassware is cleaned with dichromic acid cleaning solution, rinsed with tap water, then deionized water, acetone, and allowed to dry completely. The glassware is rinsed with nanograde benzene before use. The Teflon cups are cleaned with benzene then with acetone.

(b) Pre-weigh the 2 ml Perkin-Elmer Teflon cups to one hundredth of a milligram on a Perkin-Elmer autobalance AD 2 Tare weight of the cups is about 50 mg.

(c) Place the silver membrane filter and glass fiber filter into a 15 ml test tube.

(d) Extract with 5 ml of benzene for five minutes in an ultrasonic cleaner.

(e) Filter the extract in 15 ml medium glass fritted funnels.

(f) Rinse test tube and filters with two 1.5 ml aliquots of benzene and filter through the fritted glass funnel.

(g) Collect the extract and two rinses in a 10 ml Kontes graduated evaporative concentrator.

(h) Evaporate down to a 1 ml while rinsing the sides with benzene.

(i) Pipet 0.5 ml into the Teflon cup and evaporate to dryness in a vacuum oven at 40°C for 3 hours.

(j) Weight the Teflon cup and the weight gain is due to the benzene soluble residue in half the sample.

II. MEDICAL SURVEILLANCE GUIDELINES

(1) General.

The minimum requirements for the medical examination for coke oven workers are given in WAC 296-62-20017.

The initial examination is to be provided to all coke oven workers who work at least thirty days in the regulated

area. The examination includes a 14" x 17" posterior-anterior chest x-ray and a ILO/UC rating to assure some standardization of x-ray reading, pulmonary function tests (FVC and FEV 1.0), weight, urinalysis, skin examination and a urinary cytologic examination. These tests are to serve as the baseline for comparing the employee's future test results. Periodic exams include all the elements of the initial exams, except that the urine cytologic test is to be performed only on those employees who are forty-five years of age or older or who have worked for five or more years in the regulated area; periodic exams, with the exception of x-rays, are to be performed semiannually for this group instead of annually; for this group, x-rays will continue to be given at least annually. The examination contents are minimum requirements, additional tests such as lateral and oblique x-rays or additional pulmonary function tests may be performed if deemed necessary.

(2) Pulmonary function tests.

Pulmonary function tests should be performed in a manner which minimizes subject and operator bias. There has been shown to be learning effects with regard to the results obtained from certain tests, such as FEV 1.0. Best results can be obtained by multiple trials for each subject. The best of three trials or the average of the last three of five trials may be used in obtaining reliable results. The type of equipment used (manufacturer, model, etc.) should be recorded with the results as reliability and accuracy varies and such information may be important in the evaluation of test results. Care should be exercised to obtain the best possible testing equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-094, § 296-62-20029, filed 8/17/99, effective 12/1/99; 98-02-030, § 296-62-20029, filed 12/31/97, effective 1/31/98; Order 77-14, Appendix B (codified as WAC 296-62-20029), filed 7/25/77.]

WAC 296-62-300 Hazardous waste operations and treatment, storage, and disposal facilities.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-300, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 94-15-096 (Order 94-07), § 296-62-300, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-62-300, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-300, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-300, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-300, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30001 Scope and application. (1) Scope. This section covers employers who have employees who work in the following operations:

(a) Clean-up operations required by a governmental body, whether federal, state, local, or other involving hazardous substances that are conducted at uncontrolled hazardous waste sites (including, but not limited to, the EPA's National Priority Site List (NPL), state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained);

(b) Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA) as amended (42 U.S.C. 6901 et seq.);

(c) Voluntary clean-up operations at sites recognized by federal, state, local, or other governmental bodies as uncontrolled hazardous waste sites;

(d) Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR Parts 264 and 265 under RCRA; or by agencies under agreement with U.S.E.P.A. to implement RCRA regulations.

(2) Application.

(a) All requirements of this chapter and chapters 296-24 and 296-155 WAC apply to hazardous waste operations whether covered by this part or not. If there is a conflict or overlap, the provision more protective of employee safety and health must apply.

(b) Hazardous substance clean-up operations within the scope of subsection (1)(a), (b), and (c) of this section must comply with all sections of WAC 296-62-410, Part R, Emergency response to hazardous substance release.

(c) Operations within the scope of subsection (1)(d) of this section must comply only with the requirements of WAC 296-62-3140 through 296-62-31430.

Notes and Exceptions:

(i) All provisions of WAC 296-62-3140 through 296-62-31430 cover any treatment, storage, or disposal (TSD) operation regulated by 40 CFR Parts 264 and 265 or by state law authorized under RCRA, and required to have a permit or interim status from EPA under 40 CFR 270.1 or from a state agency under RCRA.

(ii) Employers who are not required to have a permit or interim status because they are conditionally exempt small quantity generators under 40 CFR 261.5 or are generators who qualify under 40 CFR 262.34 for exemptions from regulation under 40 CFR Parts 264, 265, and 270 ("excepted employers") are not covered by WAC 296-62-31405 through 296-62-31445. Excepted employers who are required by the EPA or state agency to have their employees engage in emergency response or who direct their employees to engage in emergency response are covered by WAC 296-62-31450 through 296-62-31470 and cannot be exempted by WAC 296-62-31455. Excepted employers who are not required to have employees engage in emergency response, who direct their employees to evacuate in the case of such emergencies and who meet the requirements of WAC 296-62-31455 are exempt from the balance of WAC 296-62-31450 through 296-62-31470.

(iii) If an area is used primarily for treatment, storage or disposal, any emergency response operations in that area must comply with WAC 296-62-31410 through 296-62-31470. In other areas not used primarily for treatment, storage or disposal, any emergency response operations must comply with WAC 296-62-410, Part R, Emergency response to hazardous substance release. Compliance with the requirements of WAC 296-62-410, Part R, Emergency response to hazardous substance release must be deemed to be in compliance with the requirements of WAC 296-62-31450 through 296-62-31470.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30001, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30003 Definitions. "Buddy system" means a system of organizing employees into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

"Clean-up operation" means an operation where hazardous substances are removed, contained, incinerated, neutralized, stabilized, cleared-up, or in any other manner processed or handled with the ultimate goal of making the site safer for people or the environment.

"Contamination reduction zone" means the buffer between the exclusion zone and the outermost clean zone.

"Decontamination" means the removal of hazardous substances from employees and their equipment to the extent necessary to preclude the occurrence of foreseeable adverse health effects.

"Emergency response" or "responding to emergencies" means a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area or by maintenance personnel are not considered to be emergency responses within the scope of this standard. Responses to release of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered to be emergency responses.

"Exclusion zone" means the innermost zone at a site where contamination does occur.

"Facility" means:

Any building structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly-owned treatment works), well, pit, pond, lagoon, impoundment, ditch, storage container, motor vehicle, rolling stock, or aircraft; or

Any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any water-borne vessel.

"Hazardous substance" means any substance designated or listed under this definition, exposure to which results or may result in adverse effects on the health or safety of employees:

Any substance defined under section 101(14) of CERCLA;

Any biological agent and other disease-causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring;

Any substance listed by the United States Department of Transportation as hazardous materials under WAC 480-12-195; and

Hazardous waste as herein defined.

"Hazardous waste" means:

A waste or combination of wastes as defined as a "health hazard."

"Hazardous waste operation" means any operation conducted within the scope of this standard.

"Hazardous waste site" or "site" means any facility or location within the scope of this standard at which hazardous waste operations take place.

"Health hazard" means a chemical, mixture of chemicals, or a pathogen for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. It also includes stress due to temperature extremes. Further definition of the terms used above can be found in Appendix A to chapter 296-62 WAC, Part C.

"IDLH" or "immediately dangerous to life or health" means any atmospheric concentration of any toxic, corrosive, or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

"Oxygen deficiency" means that concentration of oxygen by volume below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen by volume is less than 19.5 percent oxygen.

"Permissible exposure limit" means the exposure, inhalation, or dermal permissible limit specified in WAC 296-62-075 through 296-62-07515.

"Published exposure level" means the exposure limits published in "NIOSH Recommendations for Occupational Health Standards" dated 1986 incorporated by reference, or if none is specified, the exposure limits published in the standards specified by the American Conference of Governmental Industrial Hygienists in their publication "Threshold Limit Values and Biological Exposure Indices for 1988-89" dated 1988 incorporated by reference.

"Postemergency response" means that portion of an emergency response performed after the immediate threat of a release has been stabilized or eliminated and clean-up of the site has begun. If postemergency response is performed by an employer's own employees who were part of the initial emergency response, it is considered to be part of the initial response and not postemergency response. However, if a group of an employer's own employees, separate from the group providing initial response, performs the clean-up operation, then the separate group of employees would be considered to be performing postemergency response and subject to chapter 296-62 WAC, Part R.

"Qualified person" means a person with specific training, knowledge, and experience in the area for which the person has responsibility and the authority to control.

"Site safety and health supervisor (or official)" means the individual located on a hazardous waste site who is responsible to the employer and has the authority and knowledge necessary to implement the site safety and health plan and verify compliance with applicable safety and health requirements.

"Site work zones" means an exclusion zone, contamination reduction zone, and a clean zone established at a hazardous waste site before clean-up work begins to prevent or reduce the movement of contaminants from the site to uncontaminated areas and to control public, employee, and equipment exposure to hazardous substances.

The exclusion zone is the innermost of the zones and is where contamination does occur. The contamination reduction zone is the zone between the exclusion zone and the clean zone and serves as a transition and buffer between the contaminated and clean zone to further reduce the physical transfer of contaminating substances to the public, employees, and equipment. The clean zone is the outermost of the zones and is a noncontaminated or clean area. The level of contamination in these zones is not defined and some designated exclusion zones can have very little contamination directly affecting employees.

The contaminated reduction corridors are the designated areas within the contaminated reduction zone for the decontamination of personnel and equipment.

"Small quantity generator" means a generator of hazardous wastes who in any calendar month generates no more than 1000 kilograms (2205 pounds) of hazardous waste in that month.

"Uncontrolled hazardous waste site" means an area identified as an uncontrolled hazardous waste site by a governmental body, whether federal, state, local, or other where an accumulation of hazardous substances creates a threat to the health and safety of individuals or the environment or both. Some sites are found on public lands, such as those created by former municipal, county, or state landfills where illegal or poorly managed waste disposal has taken place. Other sites are found on private property, often belonging to generators or former generators of hazardous substance waste. Examples of such sites include, but are not limited to, surface impoundments, landfills, dumps, and tank or drum farms. Normal operations at TSD sites are not covered by this definition.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30003, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3010 Overview of a written safety and health program.

Note: Safety and health programs developed and implemented to meet other federal, state, or local regulations are considered acceptable in meeting this requirement if they cover or are modified to cover the topics required in this section. An additional or separate safety and health program is not required by this section.

Employers must develop and implement a written safety and health program for their employees involved in hazard-

ous waste operations. The program must be designed to identify, evaluate, and control safety and health hazards and provide for emergency response for hazardous waste operations.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3010, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-3010, filed 1/18/95, effective 3/1/95; 89-21-018 (Order 89-10), § 296-62-3010, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3010, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30105 Elements of a safety and health program. The written safety and health program must include the following elements:

- (1) An organizational structure;
- (2) A comprehensive workplan;
- (3) A site-specific safety and health plan which need not repeat the employer's standard operating procedures required in subsection (7) of this section;
- (4) The safety and health training program;
- (5) The medical surveillance program;
- (6) The employer's standard operating procedures for safety and health; and
- (7) Any necessary interface between general program and site specific activities.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30105, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30110 Safety considerations during the initial site excavation. Site excavations created during initial site preparation or during hazardous waste operations must be shored or sloped as appropriate to prevent accidental collapse in accordance with subpart N of chapter 296-155 WAC.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30110, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30115 Notifying contractors and subcontractors of procedures and hazards. An employer who retains contractor or subcontractor services for work in hazardous waste operations must inform those contractors, subcontractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety, or other hazards of the hazardous waste operation that have been identified by the employer, including those identified in the employer's information program.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30115, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30120 Availability of the safety and health program. The written safety and health program must be made available to any contractor or subcontractor or their representative who will be involved with the hazardous waste operation; to employees; to employee designated representatives; to WISHA personnel, and to personnel of other federal, state, or local agencies with regulatory authority over the site.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30120, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30125 Organizational structure of the site safety and health program. (1) The organizational structure of the site safety and health program must establish

the specific chain of command and specify the overall responsibilities of supervisors and employees. It must include at a minimum, the following elements:

(a) A general supervisor who has the responsibility and authority to direct all hazardous waste operations.

(b) A site safety and health supervisor who has the responsibility and authority to develop and implement the site safety and health plan and verify compliance.

(c) All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities.

(d) The lines of authority, responsibility, and communication.

(2) The organizational structure shall be reviewed and updated as necessary to reflect the current status of waste site operations.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30125, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30130 Comprehensive workplan of the site program. The comprehensive workplan must address the tasks and objectives of site operations and the logistics and resources required to reach those tasks and objectives. The comprehensive workplan must:

(1) Address anticipated clean-up activities as well as normal operating procedures which need not repeat the employers procedures available elsewhere.

(2) Define work tasks and objectives and identify the methods for accomplishing those tasks and objectives.

(3) Establish personnel requirements for implementing the plan.

(4) Provide for the implementation of the training required in WAC 296-62-3040.

(5) Provide for the implementation of the required informational programs required in WAC 296-62-3080.

(6) Provide for the implementation of the medical surveillance program described in WAC 296-62-3050 through 296-62-30535.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30130, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30135 Overview of a site-specific safety and health plan. (1) A written site-specific safety and health plan, must be kept on site. It must address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection.

(2) Elements of a site-specific safety and health plan. The site-specific safety and health plan must include the following elements:

(a) The names of key personnel and alternates responsible for site safety and health, including a site safety and health supervisor.

(b) A safety and health risk or hazard analysis for each site task and operation found in the workplan.

(c) Employee training assignments to assure compliance with WAC 296-62-3040 through 296-62-30465.

(d) Personal protective equipment to be used by employees for each of the site tasks and operations being conducted as required by the personal protective equipment program in WAC 296-62-30615.

(e) A medical surveillance program meeting the requirements in WAC 296-62-3050 through 296-62-30535.

(f) Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used.

(g) Site control measures in WAC 296-62-3030 through 296-62-30315.

(h) Decontamination procedures in WAC 296-62-3100 through 296-62-31015.

(i) An emergency response plan meeting the requirements of chapter 296-62 WAC, Part R for safe and effective responses to emergencies, including the necessary PPE and other equipment.

(j) Confined space and permit-required confined space entry procedures as addressed in chapter 296-62 WAC, Part M.

(k) A spill containment program meeting the requirements of WAC 296-62-3090 through 296-62-30940.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30135, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30140 Preentry briefing of the site-specific safety and health plan. The site-specific safety and health plan must provide for preentry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the site safety and health plan and that this plan is being followed. The information and data obtained from site characterization and analysis work required in WAC 296-62-3020 through 296-62-30235 must be used to prepare and update the site safety and health plan.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30140, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30145 Effectiveness of site safety and health plan. Inspections must be conducted by the site safety and health supervisor or, in the absence of that individual, another individual who is knowledgeable in occupational safety and health acting on behalf of the employer as necessary to determine the effectiveness of the site safety and health plan. Any deficiencies in the effectiveness of the site safety and health plan must be corrected by the employer.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30145, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3020 Site characterization and analysis. Hazardous waste sites must be evaluated in accordance with this section to identify specific site hazards and to determine the appropriate safety and health control procedures needed to protect employees from the identified hazards.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3020, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 94-16-145, § 296-62-3020, filed 8/3/94, effective 9/12/94; 90-20-091 (Order 90-14), § 296-62-3020, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3020, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3020, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30205 Preliminary evaluation. A preliminary evaluation of a site's characteristics must be performed prior to site entry by a qualified person in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics must be performed by a qualified person in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30205, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30210 Hazard identification. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH), or other conditions that may cause death or serious harm, must be identified during the preliminary survey and evaluated during the detailed survey. Examples of such hazards include, but are not limited to, confined space entry, potentially explosive or flammable situations, visible vapor clouds, or areas where biological indicators such as dead animals or vegetation are located.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30210, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30215 Required information. The following information to the extent available must be obtained by the employer prior to allowing employees to enter a site:

- (1) Location and approximate size of the site.
- (2) Description of the response activity and/or the job task to be performed.
- (3) Duration of the planned employee activity.
- (4) Site topography and accessibility by air and roads.
- (5) Safety and health hazards expected at the site.
- (6) Pathways for hazardous substance dispersion.
- (7) Present status and capabilities of emergency response teams that would provide assistance to hazardous waste clean-up site employees at the time of an emergency.
- (8) Hazardous substances and health hazards involved or expected at the site and their chemical and physical properties.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30215, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30220 Personal protective equipment. Personal protective equipment (PPE) must be provided and used during initial site entry in accordance with the following requirements:

- (1) Based upon the results of the preliminary site evaluation, an ensemble of PPE must be selected and used during initial site entry which will provide protection to a level of exposure below established permissible exposure limits and published exposure levels for known or suspected hazardous substances and health hazards, and which will provide protection against other known and suspected hazards identified during the preliminary site evaluation. If there is no permissible exposure limit or published exposure level, the employer may use other published studies and information as a guide to appropriate personal protective equipment. Level A and

Level B personal protective equipment is required for the most hazardous actual or potential exposures.

(2) If positive-pressure self-contained breathing apparatus is not used as part of the entry ensemble, and if respiratory protection is warranted by the potential hazards identified during the preliminary site evaluation, an escape self-contained breathing apparatus of at least five minute's duration must be carried by employees during initial site entry.

(3) If the preliminary site evaluation does not produce sufficient information to identify the hazards or suspected hazards of the site an ensemble providing protection equivalent to Level B PPE must be provided as minimum protection and direct reading instruments must be used as appropriate for identifying IDLH conditions. (See WAC 296-62-3170 - Appendix B for a description of Level B hazards and the recommendations for Level B protective equipment.)

(4) Once the hazards of the site have been identified, the appropriate PPE must be selected and used in accordance with WAC 296-62-3060 through 296-62-30615.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30220, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30225 Monitoring. The following monitoring must be conducted during initial site entry when the site evaluation produces information that shows the potential for ionizing radiation or IDLH conditions, or when the site information is not sufficient to rule out these possible conditions:

- (1) Monitoring with direct reading instruments for hazardous levels of ionizing radiation.
- (2) Monitoring the air with appropriate direct reading equipment (i.e., combustible gas meters, detector tubes) for IDLH and other conditions that may cause death or serious harm (combustible or explosive atmospheres, oxygen deficiency, toxic substances).
- (3) Visually observing for signs of actual or potential IDLH or other dangerous conditions.
- (4) An ongoing air monitoring program in accordance with WAC 296-62-30710 and 296-62-30715 must be implemented after site characterization has determined the site is safe for the start-up of operations.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30225, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30230 Risk identification. Once the presence and concentrations of specific hazardous substances and health hazards have been established, the risks associated with these substances must be identified. Employees who will be working on the site must be informed of any risks that have been identified. In situations covered by chapter 296-62 WAC, Part C, training required by those standards need not be duplicated.

Note: Risks to consider include, but are not limited to:

- (1) Exposures exceeding the permissible exposure limits and published exposure levels.
- (2) IDLH concentrations.
- (3) Potential skin absorption and irritation sources.
- (4) Potential eye irritation sources.
- (5) Explosion sensitivity and flammability ranges.
- (6) Oxygen deficiency.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30230, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30235 Employee notification. Any information concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform must be made available to all employees prior to the commencement of their work activities. The employer may use information developed for the hazard communication standard, chapter 296-62 WAC, Part C, for this purpose.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30235, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3030 Site control. Appropriate site control procedures must be implemented to control employee exposure to hazardous substances before clean-up work begins.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3030, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-3030, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3030, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30305 Site control program. A site control program for protecting employees which is part of the employer's site safety and health program required in WAC 296-62-3010 through 296-62-30145 must be developed during the planning stages of a hazardous waste clean-up operation and modified as necessary as new information becomes available.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30305, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30310 Elements of the site control program. The site control program must, as a minimum, include: A site map; site work zones; the use of a "buddy system"; site communications including alerting means for emergencies; the standard operating procedures or safe work practices; and, identification of nearest medical assistance. Where these requirements are covered elsewhere they need not be repeated.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30310, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30315 Site work zones. (1) The site work zones must be the exclusion zone, contamination reduction zone, and the clean zone.

(2) Decontamination procedures must take place in the contamination reduction corridor consisting, if practical, of separate corridors for personnel and for equipment.

(3) An entry and exit check point must be established at the boundary of the exclusion zone to regulate the flow of personnel and equipment into and out of the zone. Exit from the exclusion zone must be through a contamination reduction corridor.

(4) Access to the contamination reduction zone from the clean zone is through a control point. Personnel entering or working in the contamination zone must wear the prescribed personnel protective equipment, if required, for working in

this zone. Entering the clean zone requires removal of any protective equipment worn in the contamination reduction zone.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30315, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3040 General training requirements and the employees covered. (1) All employees working on site (such as but not limited to equipment operators, general laborers, and others) exposed to hazardous substances, health hazards, or safety hazards, and their supervisors and management responsible for the site, must receive training meeting the requirements of this subsection before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they must review training as specified in this subsection.

(2) Employees must not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3040, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-3040, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-3040, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-3040, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3040, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3040, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30405 Elements covered in training. The training must thoroughly cover the following:

(1) Names of personnel and alternates responsible for site safety and health;

(2) Safety, health, and other hazards present on the site;

(3) Use of personal protective equipment;

(4) Work practices by which the employee can minimize risks from hazards;

(5) Safe use of engineering controls and equipment on the site;

(6) Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards; and

(7) The contents of the site safety and health plan set forth in WAC 296-62-31035 (2)(g) through (j).

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30405, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30410 Initial training. General site workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards must receive the following required training:

(1) General site workers required to wear Level A or Level B personal protective equipment because of the types of hazards to which they are exposed or have the potential for being exposed are required to have 80 hours of training and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

(2) General site workers required to wear Level C or D personal protective equipment, equipment operators or transport vehicle operators, are required to have 40 hours of train-

ing and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

(3) General site workers on site only occasionally for specific limited tasks, and supervisors not working in the two inner zones are required to have 24 hours of training. For example, certain Environmental Protection Agency, and department of ecology employees, labor and industries inspectors and other short-term monitoring and surveying personnel would be required to only have 24 hours of training if they are on-site only occasionally for a specific limited task and are unlikely to be exposed over permissible exposure levels and published exposure limits. A minimum of one day actual field experience under direct supervision is also required.

(4) Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, must receive a minimum of 24 hours of instruction off the site and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

(5) Workers with 24 hours of training who are covered by subsections (3) and (4) of this section, and who become general site workers or who are required to wear respirators, must have the additional 16 hours and two days of training necessary to total the training specified in subsection (2) of this section.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30410, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30415 Management and supervisor training. On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations must receive the same initial training as listed in WAC 296-62-30410, and three days of supervised field experience and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30415, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30420 Law enforcement at illicit drug labs. Exception: WISHA did not intend application of the 80 hour training requirement to law enforcement personnel required to enter illicit drug labs, secure the premise, and obtain necessary evidence for law enforcement purposes. Attendance at a specific 40 hours course, such as that presented by the criminal justice training commission, is acceptable.

Note: If cleanup activities are conducted by law enforcement personnel, then appropriate hazardous waste cleanup training would be required.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30420, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30425 Training course content for 40 and 80 hour hazardous waste cleanup courses. As a minimum, the training course content for the 40 hour and 80 hour training program must include the following topics:

(1) Overview of the applicable sections of Part P of chapter 296-62 WAC and the elements of an employer's effective occupational safety and health program.

(2) Effect of chemical exposure to hazardous substances (i.e., toxicity, carcinogens, irritants, sensitizers, etc.).

(3) Effects of biological and radiological exposures.

(4) Fire and explosion hazards (i.e., flammable and combustible liquids, reactive materials).

(5) General safety hazards, including electrical hazards, powered equipment hazards, walking-working surface hazards and those hazards associated with hot and cold temperature extremes.

(6) Permit-required confined space, tank, and vault hazards and entry procedures.

(7) Names of personnel and alternates, where appropriate, responsible for site safety and health at the site.

(8) Specific safety, health, and other hazards that are to be addressed at a site and in the site safety and health plan.

(9) Use of personal protective equipment and the implementation of the personal protective equipment program.

(10) Work practices that will minimize employee risk from site hazards.

(11) Safe use of engineering controls and equipment and any new relevant technology or procedure.

(12) Content of the medical surveillance program and requirements, including the recognition of signs and symptoms of overexposure to hazardous substances.

(13) The contents of an effective site safety and health plan.

(14) Use of monitoring equipment with "hands-on" experience and the implementation of the employee and site monitoring program.

(15) Implementation and use of the information program.

(16) Drum and container handling procedures and the elements of a spill containment program.

(17) Selection and use of material handling equipment.

(18) Methods for assessment of risk and handling of radioactive wastes.

(19) Methods for handling shock-sensitive wastes.

(20) Laboratory waste pack handling procedures.

(21) Container sampling procedures and safeguards.

(22) Safe preparation procedures for shipping and transport of containers.

(23) Decontamination program and procedures.

(24) Emergency response plan and procedures including first aid.

(25) Safe site illumination levels.

(26) Site sanitation procedures and equipment for employee needs.

(27) Review of the applicable appendices to Part P of chapter 296-62 WAC.

(28) Overview and explanation of WISHA's hazard communication standard Part C of chapter 296-62 WAC.

(29) Sources of reference, additional information and efficient use of relevant manuals and hazard coding systems.

- (30) Principles of toxicology and biological monitoring.
- (31) Rights and responsibilities of employees and employers under WISHA and CERCLA.
- (32) Hands-on field exercises and demonstrations.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30425, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30430 Training content for 24-hour hazardous waste cleanup course. As a minimum, the 24-hour training course required in WAC 296-62-30410 (3) and (4) for employees engaged in occasional visits to uncontrolled hazardous waste sites must include the following topics where they are applicable to the job function to be performed:

- (1) Overview of applicable sections of Part P of chapter 296-62 WAC and the elements of the employer's effective occupational safety and health program.
- (2) Employee rights and responsibilities under WISHA and CERCLA.
- (3) Overview of relevant chemical exposures to hazardous substances (i.e., toxics, carcinogens, irritants, sensitizers, etc.).
- (4) Overview of the principles of toxicology and biological monitoring.
- (5) Use of monitoring equipment with hands-on practice and an overview of a site monitoring program.
- (6) Overview of site hazards including fire and explosion, confined spaces, oxygen deficiency, electrical hazards, powered equipment hazards, walking-working surface hazards.
- (7) The contents of an effective site safety and health plan.
- (8) Use of personal protective equipment and the implementation of the personal protective equipment program.
- (9) Work practices that will minimize employee risk from site hazards.
- (10) Site simulations with "hands-on" exercises and practice.
- (11) Emergency response planning and response including first aid.
- (12) Content of the medical surveillance program and requirements, including the recognition of signs and symptoms of overexposure to hazardous substances.
- (13) Decontamination programs and procedures.
- (14) Safe use of engineering controls and equipment.
- (15) Sources of references and efficient use of relevant manuals and knowledge of hazard coding systems.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30430, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30435 16-hour supplemental training for hazardous waste sites. As a minimum, employees who have received 24 hours of training for hazardous waste site operations must receive training in the following topics before they are allowed to work as general site workers or if they are required to wear respirators:

- (1) Relevant chemical exposures to hazardous substances beyond that previously covered.
- (2) Site hazards including fire and explosion, confined spaces, oxygen deficiency, electrical, powered equipment,

and walking-working surfaces beyond that previously covered.

(3) Names of personnel and alternates responsible for site safety and health at the site, where appropriate.

(4) Use of monitoring equipment and the implementation of the employee and the site monitoring program beyond that previously covered.

(5) Implementation and use of the informational program.

(6) Drum and container handling procedures and the elements of a spill containment program.

(7) Selection and use of material handling equipment.

(8) Methods for assessment of risk and handling of radioactive wastes.

(9) Methods for handling shock-sensitive wastes.

(10) Laboratory waste pack handling procedures.

(11) Container sampling procedures and safeguards.

(12) Safe preparation procedures for shipping and transport of containers.

(13) Decontamination program and procedures.

(14) Safety site illumination levels.

(15) Site sanitation procedures and equipment.

(16) Review of the applicable appendices to Part P of chapter 296-62 WAC.

(17) Overview and explanation of WISHA's Hazard communication standard Part C of chapter 296-62 WAC.

(18) Sources of reference and additional information.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30435, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30440 Additional 8 hours of training for supervisors and managers. Supervisors and managers must receive an additional eight hours of training in the following subjects:

(1) Management of hazardous wastes and their disposal.

(2) Federal, state, and local agencies to be contacted in the event of a release of hazardous substances.

(3) Management of emergency procedures in the event of a release of hazardous substances.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30440, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30445 Qualifications for trainers. Trainers must be qualified to instruct employees about the subject matter that is being presented in training. Such trainers must have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they must have the academic credentials and instructional experience necessary for teaching the subjects. Instructors must demonstrate competent instructional skills and knowledge of the applicable subject matter.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30445, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30450 Training certification. Employees and supervisors that have received and successfully completed the training and field experience specified in WAC 296-62-3040 through 296-62-30415 must be certified by their instructor or the head instructor and trained supervisor

as having successfully completed the necessary training. A written certificate must be given to each person certified. Any person who has not been certified or who does not meet the requirements of WAC 296-62-30465 must be prohibited from engaging in hazardous waste operations.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30450, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30455 Training requirements for emergency response. Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean-up sites that may expose them to hazardous substances must be trained in how to respond to expected emergencies.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30455, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30460 Refresher training. Employees specified in WAC 296-62-3040 and managers specified in WAC 296-62-30415 must receive eight hours of refresher training annually on the items specified in WAC 296-62-30405 and/or 296-62-30415, any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30460, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30465 Equivalent training. Employers who can show by documentation or certification that an employee's work experience and/or training has resulted in training equivalent to that training required in WAC 296-62-3040 through 296-62-30410 must not be required to provide the initial training requirements of those sections to such employees and must provide a copy of the certification or documentation to the employee upon request. However, certified employees or employees with equivalent training new to a site must receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience. The 80 hours of instruction required can be fulfilled as follows:

(1) Instruction can include a combination of presently available 40 hour training sessions and other related classes or training including additional supervised on-the-job training as long as material covered includes elements required in the training section WAC 296-62-30405 of the regulations. A single 80 hour training session is also acceptable.

(2) Previously attended courses including eight-hour refresher courses apply toward the 80 hour requirement and need not be repeated.

(3) Documentation of previous experience and training by qualified trainers is required of employers and must be available to inspectors for review.

(4) When calculating hours of training, WISHA assumes a "normal" work day to be eight hours with sufficient time for lunch and other breaks.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30465, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3050 Medical surveillance. Employers engaged in operations specified in WAC 296-62-300 (1) and not covered by WAC 296-62-300(2), exceptions; must institute a medical surveillance program.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3050, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-62-3050, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-62-3050, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3050, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3050, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30505 Employees covered. The medical surveillance program must be instituted for the following employees:

(1) All employees who are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits or, if there is no permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year;

(2) All employees who wear a respirator for 30 days or more a year or as required by WAC 296-62-071; and

(3) All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; and

(4) Members of HAZMAT teams.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30505, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30510 Frequency of medical examinations and consultations. Medical examinations and consultations shall be made available by the employer to each employee covered under WAC 296-62-3050 on the following schedules:

(1) For employees covered under WAC 296-62-30505 (1), (2), and (4):

(a) Prior to assignment;

(b) At least once every twelve months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is appropriate;

(c) At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months;

(d) As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that the employee has been injured or exposed above the permissible exposure limits, or published exposure levels in an emergency situation;

(e) At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.

(2) For employees covered under WAC 296-62-30505 who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible

exposure limits or the published exposure levels without the necessary personal protective equipment being used:

(a) As soon as possible following the emergency incident or development of signs or symptoms;

(b) At additional times, if the examining physician determines that follow-up examinations or consultations are medically necessary.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30510, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30515 Content of medical examinations and consultations. (1) Medical examinations required by WAC 296-62-30510 must include a medical and work history (or updated history if one is in the employee's file) with special emphasis on symptoms related to the handling of hazardous substances and health hazards, and to fitness for duty including the ability to wear any required PPE under conditions (i.e., temperature extremes) that may be expected at the worksite.

(2) The content of medical examinations or consultations made available to employees under this section must be determined by the examining physician. The guidelines in the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (See Appendix D, Reference #9) should be consulted.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30515, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30520 Examination by a physician and costs. All medical examinations and procedures must be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine, and must be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30520, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30525 Information provided to the physician. The employer must provide one copy of this standard and its appendices to the examining physician, and the following for each employee:

(1) A description of the employee's duties as they relate to the employee's exposures;

(2) The employee's exposure levels or anticipated exposure levels;

(3) A description of any personal protective equipment used or to be used;

(4) Information from previous medical examinations of the employee which is not readily available to the examining physician; and

(5) Information required in WAC 296-62-071 through 296-62-07121.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30525, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30530 Physician's written opinion. (1) The employer must obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:

(a) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response or from respirators use.

(b) The physician's recommended limitations upon the employees assigned work.

(c) The results of the medical examination and tests if requested by the employee.

(d) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(2) The written opinion obtained by the employer must not reveal specific findings or diagnoses unrelated to occupational exposures.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30530, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30535 Recordkeeping of medical surveillance activities. (1) An accurate record of the medical surveillance required by this section must be retained. This record must be retained for the period specified and meet the criteria of Part B of chapter 296-62 WAC.

(2) The record required in subsection (1) of this section must include at least the following information:

(a) The name and Social Security number of the employee;

(b) Physicians' written opinions, recommended limitations, and results of examinations and tests;

(c) Any employee medical complaints related to exposure to hazardous substances;

(d) A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30535, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3060 Engineering controls, work practices, and personal protective equipment for employee protection. (1) Engineering controls, work practices, personal protective equipment, or a combination of these must be implemented in accordance with this section to protect employees from exposure to hazardous substances and health hazards.

(a) Engineering controls, work practices, and PPE for substances regulated in chapter 296-62 WAC.

Engineering controls and work practices must be instituted to reduce and maintain employee exposure to or below the permissible exposure limits for substances regulated by this chapter, except to the extent that such controls and practices are not feasible.

Note: Engineering controls which may be feasible include the use of pressurized cabs or control booths on equipment, and/or the use of remotely operated material handling equipment. Work practices which may be feasible are removing all nonessential employees from potential exposure during opening of drums, wetting down dusty operations, and locating employees upwind of possible hazards.

(b) Whenever engineering controls and work practices are not feasible, or not required, any reasonable combination of engineering controls, work practices, and PPE must be used to reduce and maintain exposures to or below the permissible exposure limits or dose limits for substances regulated by chapter 296-62 WAC.

(c) The employer must not implement a schedule of employee rotation as a means of compliance with permissible exposure limits or dose limits except when there is no other feasible way of complying with the airborne or dermal dose limits for ionizing radiation.

(d) The provisions of WAC 296-62-080 through 296-62-09013, 296-62-09015 through 296-62-09055, and 296-62-100 through 296-62-130 must be followed.

(2) Engineering controls, work practices, and personal protective equipment for substances not regulated in chapter 296-62 WAC. An appropriate combination of engineering controls, work practices, and personal protective equipment must be used to reduce and maintain employee exposure to or below published exposure levels for hazardous substances and health hazards not regulated by chapter 296-62 WAC. The employer may use the published literature and MSDS as a guide in making the employer's determination as to what level of protection the employer believes is appropriate for hazardous substances and health hazards for which there is no permissible exposure limit or published exposure level.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3060, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-3060, filed 7/20/94, effective 9/20/94; 90-20-091 (Order 90-14), § 296-62-3060, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3060, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3060, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30605 Personal protective equipment selection. (1) Personal protective equipment (PPE) must be selected and used which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization and analysis.

(2) Personal protective equipment selection must be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

(3) Positive pressure self-contained breathing apparatus, or positive pressure air-line respirators equipped with an escape air supply must be used when chemical exposure levels present will create a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.

(4) Totally encapsulating chemical protective suits (protection equivalent to Level A protection as recommended in Appendix B) must be used in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.

(5) The level of protection provided by PPE selection must be increased when additional information or site conditions indicate that increased protection is necessary to reduce employee exposures below permissible exposure limits and published exposure levels for hazardous substances and

health hazards. (See WAC 296-62-3170 - Appendix B for guidance on selecting PPE ensembles.)

Note: The level of employee protection provided may be decreased when additional information or site conditions show that decreased protection will not result in increased hazardous exposures to employees.

(6) Personal protective equipment must be selected and used to meet the requirements of chapter 296-24 WAC, Part A-2, and additional requirements specified in this part.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30605, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30610 Totally encapsulating chemical protective suits. (1) Totally encapsulating suits must protect employees from the particular hazards which are identified during site characterization and analysis.

(2) Totally encapsulating suits must be capable of maintaining positive air pressure. (See WAC 296-62-3160 - Appendix A for a test method which may be used to evaluate this requirement.)

(3) Totally encapsulating suits must be capable of preventing inward test gas leakage of more than 0.5 percent. (See WAC 296-62-3160 - Appendix A for a test method which may be used to evaluate this requirement.)

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30610, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30615 Personal protective equipment (PPE) program. A written personal protective equipment program, which is part of the employer's safety and health program required in WAC 296-62-3010 or 296-62-31405 and which must be part of the site-specific safety and health plan must be established. The PPE program must address the elements listed below. When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the plan, they need not be rewritten into the plan as long as they adequately address the procedure or element.

- (1) PPE selection based on site hazards;
- (2) PPE use and limitations of the equipment;
- (3) Work mission duration;
- (4) PPE maintenance and storage;
- (5) PPE decontamination and disposal;
- (6) PPE training and proper fitting;
- (7) PPE donning and doffing procedures;
- (8) PPE inspection procedures prior to, during, and after use;
- (9) Evaluation of the effectiveness of the PPE program; and
- (10) Limitations during temperature extremes, heat stress, and other appropriate medical considerations.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30615, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3070 Monitoring concentrations of hazardous substances. (1) Monitoring must be performed in accordance with this section where there may be a question of employee exposure to concentrations of hazardous substances in order to assure proper selection of engineering con-

trols, work practices, and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits or published exposure levels if there are no permissible exposure limits, for hazardous substances.

(2) Air monitoring must be used to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of employee protection needed on site.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3070, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3070, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3070, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3070, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30705 Monitoring during initial entry.

Upon initial entry, representative air monitoring must be conducted to identify any IDLH condition, exposure over permissible exposure limits or published exposure levels, exposure over a radioactive material's dose limits, or other dangerous condition, such as the presence of flammable atmospheres or oxygen-deficient environments.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30705, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30710 Periodic monitoring. Periodic monitoring must be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it must be considered whether the possibility that exposures have risen are as follows:

- (1) When work begins on a different portion of the site.
- (2) When contaminants other than those previously identified are being handled.
- (3) When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling).
- (4) When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon).
- (5) When a sufficient reasonable interval has passed so that exposures may have significantly increased.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30710, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30715 Monitoring of high-risk employees. After the actual clean-up phase of any hazardous waste operation commences; for example, when soil, surface water, or containers are moved or disturbed; the employer must monitor those employees likely to have the highest exposures to hazardous substances and health hazards likely to be present above permissible exposure limits or published exposure levels by using personal sampling frequently enough to characterize employee exposures. If the employees likely to have the highest exposure are over permissible exposure limits or published exposure levels, then monitoring must continue to determine all employees likely to be above those limits. The employer may use a representative sampling approach by documenting that the employees and chemicals

chosen for monitoring are based on the criteria stated in this subsection.

Note: It is not required to monitor employees engaged in site characterization operations covered by WAC 296-62-3020 through 296-62-30235.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30715, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3080 Informational programs. Employers must develop and implement a program which is part of the employer's safety and health program required in WAC 296-62-3010 through 296-62-30145 to inform employees, contractors, and subcontractors (or their representative) actually engaged in hazardous waste operations of the nature, level, and degree of exposure likely as a result of participation in such hazardous waste operations. Employees, contractors, and subcontractors working outside of the operations part of a site are not covered by this standard.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3080, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3080, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3080, filed 10/6/88, effective 11/7/88.]

WAC 296-62-3090 General requirements for handling drums and containers. (1) Hazardous substances and contaminated soils, liquids, and other residues must be handled, transported, labeled, and disposed of in accordance with this section.

(2) Drums and containers used during the clean-up must meet the appropriate DOT, OSHA, WISHA, and EPA regulations for the wastes that they contain.

(3) When practical, drums and containers must be inspected and their integrity must be assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions (i.e., buried beneath the earth, stacked behind other drums, stacked several tiers high in a pile, etc.) must be moved to an accessible location and inspected prior to further handling.

(4) Unlabeled drums and containers must be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled.

(5) Site operations must be organized to minimize the amount of drum or container movement.

(6) Prior to movement of drums or containers, all employees exposed to the transfer operation must be warned of the potential hazards associated with the contents of the drums or containers.

(7) United States Department of Transportation specified salvage drums or containers and suitable quantities of proper absorbent must be kept available and used in areas where spills, leaks, or ruptures may occur.

(8) Where major spills may occur, a spill containment program, which is part of the employer's safety and health program required in WAC 296-62-3010, must be implemented to contain and isolate the entire volume of the hazardous substance being transferred.

(9) Drums and containers that cannot be moved without rupture, leakage, or spillage must be emptied into a sound container using a device classified for the material being transferred.

(10) A ground-penetrating system or other type of detection system or device must be used to estimate the location and depth of buried drums or containers.

(11) Soil or covering material must be removed with caution to prevent drum or container rupture.

(12) Fire extinguishing equipment meeting the requirements of Part G of chapter 296-24 WAC must on hand and ready for use to control incipient fires.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3090, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-62-3090, filed 9/22/93, effective 11/1/93; 91-11-070 (Order 91-01), § 296-62-3090, filed 5/20/91, effective 6/20/91; 89-21-018, § 296-62-3090, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3090, filed 10/6/88, effective 11/7/88.]

WAC 296-62-30905 Opening drums and containers.

The following procedures must be followed in areas where drums or containers are being opened:

(1) Where an airline respirator system is used, connections to the source of air supply must be protected from contamination and the entire system must be protected from physical damage.

(2) Employees not actually involved in opening drums or containers must be kept a safe distance from the drums or containers being opened.

(3) If employees must work near or adjacent to drums or containers being opened, a suitable shield that does not interfere with the work operation must be placed between the employee and the drums or containers being opened to protect the employee in case of accidental explosion.

(4) Controls for drum or container opening equipment, monitoring equipment, and fire suppression equipment must be located behind the explosion-resistant barrier.

(5) When there is a reasonable possibility of flammable atmospheres being present, material handling equipment and hand tools must be of the type to prevent sources of ignition.

(6) Drums and containers must be opened in such a manner that excess interior pressure will be safely relieved. If pressure cannot be relieved from a remote location, appropriate shielding must be placed between the employee and the drums or containers to reduce the risk of employee injury.

(7) Employees must not stand upon or work from drums or containers.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30905, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30910 Material handling equipment.

Material handling equipment used to transfer drums and containers must be selected, positioned, and operated to minimize sources of ignition related to the equipment from igniting vapors released from ruptured drums or containers.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30910, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30915 Radioactive wastes. Drums and containers containing radioactive wastes must not be handled until such time as their hazard to employees is properly assessed.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30915, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30920 Shock-sensitive wastes. As a minimum, the following special precautions must be taken when drums and containers containing or suspected of containing shock-sensitive wastes are handled:

(1) All nonessential employees must be evacuated from the area of transfer.

(2) Material handling equipment must be provided with explosive containment devices or protective shields to protect equipment operators from exploding containers.

(3) An employee alarm system capable of being perceived above surrounding light and noise conditions must be used to signal the commencement and completion of explosive waste handling activities.

(4) Continuous communications (i.e., portable radios, hand signals, telephones, as appropriate) must be maintained between the employee-in-charge of the immediate handling area and the site safety and health supervisor and command post until such time as the handling operation is completed. Communication equipment or methods that could cause shock-sensitive materials to explode must not be used.

(5) Drums and containers under pressure, as evidenced by bulging or swelling, must not be moved until such time as the cause for excess pressure is determined and appropriate containment procedures have been implemented to protect employees from explosive relief of the drum.

(6) Drums and containers containing packaged laboratory wastes must be considered to contain shock-sensitive or explosive materials until they have been characterized.

Caution: Shipping of shock-sensitive wastes may be prohibited under United States Department of Transportation regulations. Employers and their shippers should refer to WAC 480-12-195.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30920, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30925 Laboratory waste packs. In addition to the requirements of WAC 296-62-30915, the following precautions must be taken, as a minimum, in handling laboratory waste packs (lab packs):

(1) Lab packs must be opened only when necessary and then only by an individual knowledgeable in the inspection, classification, and segregation of the containers within the pack according to the hazards of the wastes.

(2) If crystalline material is noted on any container, the contents must be handled as a shock-sensitive waste until the contents are identified.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30925, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30930 Sampling of drum and container contents. Sampling of containers and drums must be done in accordance with a sampling procedure which is part of the site safety and health plan developed for and available to employees and others at the specific worksite.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30930, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30935 Shipping and transport of drums. (1) Drums and containers must be identified and classified prior to packaging for shipment.

(2) Drum or container staging areas must be kept to the minimum number necessary to identify and classify materials safely and prepare them for transport.

(3) Staging areas must be provided with adequate access and egress routes.

(4) Bulking of hazardous wastes must be permitted only after a thorough characterization of the materials has been completed.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30935, filed 3/23/99, effective 6/23/99.]

WAC 296-62-30940 Tanks and vaults procedures. (1) Tanks and vaults containing hazardous substances must be handled in a manner similar to that for drums and containers, taking into consideration the size of the tank or vault.

(2) Appropriate tank or vault entry procedures as described in chapter 296-62 WAC, Part M and the employer's safety and health plan must be followed whenever employees must enter a tank or vault.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30940, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3100 Decontamination procedures. (1) General. Procedures for all phases of decontamination must be developed according to WAC 296-62-3100 through 296-62-31015.

(2) Decontamination procedures.

(a) A decontamination procedure must be developed, communicated to employees and implemented before any employees or equipment may enter areas on site where potential for exposure to hazardous substances exists.

(b) Standard operating procedures must be developed to minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances.

(c) All employees leaving a contaminated area must be appropriately decontaminated; all contaminated clothing and equipment leaving a contaminated area must be appropriately disposed of or decontaminated.

(d) Decontamination procedures must be monitored by the site safety and health supervisor to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps must be taken to correct any deficiencies.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3100, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3100, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3100, filed 10/6/88, effective 11/7/88.]

WAC 296-62-31005 Location of decontamination areas. Decontamination must be performed in geographical areas that will minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31005, filed 3/23/99, effective 6/23/99.]

[2000 WAC Supp—page 1300]

WAC 296-62-31010 Decontamination of equipment and solvents. All equipment and solvents used for decontamination must be decontaminated or disposed of properly.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31010, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31015 Decontamination of personal protective clothing and equipment. (1) Protective clothing and equipment must be decontaminated, cleaned, laundered, maintained, or replaced as needed to maintain their effectiveness.

(2) Employees whose nonimpermeable clothing becomes wetted with hazardous substances must immediately remove that clothing and proceed to shower. The clothing must be disposed of or decontaminated before it is removed from the work zone.

(3) Unauthorized employees. Unauthorized employees must not remove protective clothing or equipment from change rooms.

(4) Commercial laundries or cleaning establishments. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment must be informed of the potentially harmful effects of exposures to hazardous substances.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31015, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31020 Showers and change rooms used for decontamination. Where the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, they must be provided and meet the requirements of Part B-1 of chapter 296-24 WAC. If temperature conditions prevent the effective use of water, then other effective means for cleansing must be provided and used.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31020, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3110 Emergency response plan for employees at uncontrolled hazardous waste sites. (1) An emergency response plan must be developed and implemented by all employers within the scope of WAC 296-62-30001 (1)(a) and (b) to handle anticipated emergencies prior to the commencement of hazardous waste operations. The plan must be in writing and available for inspection and copying by employees, their representatives, WISHA personnel, and other governmental agencies with relevant responsibilities.

(2) Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of this section if they provide an emergency action plan complying with WAC 296-24-567(1).

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3110, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3110, filed 10/1/90, effective 11/15/90; 90-09-026 (Order 90-01), § 296-62-3110, filed 4/10/90, effective 5/25/90; 89-21-018 (Order 89-10), § 296-62-3110, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3110, filed 10/6/88, effective 11/7/88.]

WAC 296-62-31105 Elements of an emergency response plan at uncontrolled hazardous waste sites. The employer must develop an emergency response plan for emergencies which must address as a minimum, the following:

- (1) Preemergency planning.
- (2) Personnel roles, lines of authority, and communication.
- (3) Emergency recognition and prevention.
- (4) Safe distances and places of refuge.
- (5) Site security and control.
- (6) Evacuation routes and procedures.
- (7) Decontamination procedures which are not covered by the site safety and health plan.
- (8) Emergency medical treatment and first aid.
- (9) Emergency alerting and response procedures.
- (10) Critique of response and follow-up.
- (11) PPE and emergency equipment.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31105, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31110 Procedures for handling emergency incidents at uncontrolled hazardous waste sites. (1) In addition to the elements for the emergency response plan required in WAC 296-62-31105, the following elements must be included for emergency response plans:

- (a) Site topography, layout, and prevailing weather conditions.
- (b) Procedures for reporting incidents to local, state, and federal governmental agencies.
- (2) The emergency response plan must be a separate section of the site safety and health plan.
- (3) The emergency response plan must be compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and federal agencies.
- (4) The emergency response plan must be rehearsed regularly as part of the overall training program for site operations.
- (5) The site emergency response plan must be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.
- (6) An employee alarm system must be installed in accordance with WAC 296-24-631 through 296-24-63199 to notify employees of an on-site emergency situation, to stop work activities if necessary, to lower background noise in order to speed communication, and to begin emergency procedures.
- (7) Based upon the information available at the time of the emergency, the employer must evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the on-site emergency response plan.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31110, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3112 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-62-3120 Illumination. Areas accessible to employees must be lighted to not less than the minimum illu-

mination intensities listed in Table 1 while any work is in progress:

TABLE 1 - 120.1 — MINIMUM ILLUMINATION
Intensities in Foot-Candles

Foot-candles	Area or operation
5	General site area.
3	Excavation and waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: Warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas; exception: Minimum of ten foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration and the National Institute for Occupational Safety and Health approved cap lights shall be acceptable for use in the tunnel heading.
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms).
30	First aid stations, infirmaries, and offices.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3120, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 94-15-096 (Order 94-07), § 296-62-3120, filed 7/20/94, effective 9/20/94; 89-21-018, § 296-62-3120, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3120, filed 10/6/88, effective 11/7/88.]

WAC 296-62-3130 Sanitation at temporary workplaces.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3130, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 89-21-018, § 296-62-3130, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3130, filed 10/6/88, effective 11/7/88.]

WAC 296-62-31305 Potable water. (1) An adequate supply of potable water must be provided on the site.

(2) Portable containers used to dispense drinking water must be capable of being tightly closed, and equipped with a tap. Water must not be dipped from containers.

(3) Any container used to distribute drinking water must be clearly marked as to the nature of its contents and not used for any other purpose.

(4) Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups must be provided.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31305, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31310 Nonpotable water. (1) Outlets for nonpotable water, such as water for fire fighting purposes must be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

(2) There must be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31310, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31315 Toilet facilities. (1) Toilets must be provided for employees according to Table 2.

TABLE 2 — TOILET FACILITIES

Number of employees	Minimum number of facilities
20 or fewer	One.
More than 20, fewer than 200	One toilet seat and one urinal per 40 employees.
More than 200	One toilet seat and one urinal per 50 employees.

(2) Under temporary field conditions, provisions must be made to assure that at least one toilet facility is available.

(3) Hazardous waste sites, not provided with a sanitary sewer must be provided with the following toilet facilities unless prohibited by local codes:

- (a) Chemical toilets;
- (b) Recirculating toilets;
- (c) Combustion toilets; or
- (d) Flush toilets.

(4) The requirements of this section for sanitation facilities must not apply to mobile crews having transportation readily available to nearby toilet facilities.

(5) Doors entering toilet facilities must be provided with entrance locks controlled from inside the facility.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31315, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31320 Food handling. All food service facilities and operations for employees must meet the applicable laws, ordinances, and regulations of the jurisdictions in which they are located.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31320, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31325 Temporary sleeping quarters. When temporary sleeping quarters are provided, they must be heated, ventilated, and lighted.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31325, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31330 Washing facilities. The employer must provide adequate washing facilities for employees engaged in operations where hazardous substances may be harmful to employees. Such facilities must be in near proximity to the worksite, in areas where exposures are below permissible exposure limits and published exposure levels and which are under the controls of the employer, and must be so equipped as to enable employees to remove hazardous substances from themselves.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31330, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31335 Showers and change rooms. When hazardous waste clean-up or removal operations commence on a site and the duration of the work will require six months or greater time to complete, the employer must provide showers and change rooms for all employees exposed to hazardous substances and health hazards involved in hazardous waste clean-up or removal operations.

(1) Showers must be provided and must meet the requirements of WAC 296-24-12009(3).

(2) Change rooms must be provided and must meet the requirements of WAC 296-24-12011. Change rooms must consist of two separate change areas separated by the shower area required in (1) of this subsection. One change area, with an exit leading off the worksite, must provide employees with a clean area where they can remove, store, and put on street clothing. The second area, with an exit to the worksite, must provide employees with an area where they can put on, remove and store work clothing and personal protective equipment.

(3) Showers and change rooms must be located in areas where exposures are below the permissible exposure limits and published exposure levels. If this cannot be accomplished, then a ventilation system must be provided that will supply air that is below the permissible exposure limits and published exposure levels.

(4) Employers must assure that employees shower at the end of their work shift and when leaving the hazardous waste site.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31335, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31338 New technology programs. (1) The employer must develop and implement procedures for the introduction of effective new technologies and equipment developed for the improved protection of employees working with hazardous waste clean-up operations, and the same must be implemented as part of the site safety and health program to assure that employee protection is being maintained.

(2) New technologies, equipment or control measures available to the industry, such as the use of foams, absorbents, adsorbents, neutralizers, or other means to suppress the level of air contaminants while excavating the site or for spill control, must be evaluated by employers or their representatives. Such an evaluation must be done to determine the effectiveness of the new methods, materials, or equipment before implementing their use on a large scale for enhancing employee protection. Information and data from manufacturers or suppliers may be used as part of the employer's evaluation effort. Such evaluations must be made available to WISHA upon request.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31338, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 89-21-018, § 296-62-3138, filed 10/10/89, effective 11/24/89.]

WAC 296-62-3140 Certain operations conducted under the Resource Conservation and Recovery Act of 1976 (RCRA). Employers conducting operations at treatment, storage, and disposal (TSD) facilities specified in WAC 296-62-30001 (1)(d) must provide and implement the programs specified in WAC 296-62-3140 through 296-62-31470. See the "Notes and Exceptions" of WAC 296-62-30001 (2)(c) for employers not covered.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3140, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 94-16-145, § 296-62-3140, filed 8/3/94, effective 9/12/94; 91-24-017 (Order 91-07), § 296-62-3140, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-3140, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-

3140, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3140, filed 10/6/88, effective 11/7/88.]

WAC 296-62-31405 Safety and health program under RCRA. The employer must develop and implement a written safety and health program for employees involved in hazardous waste operations that must be available for inspection by employees, their representatives and WISHA personnel. The program shall be designed to identify, evaluate and control safety and health hazards in their facilities for the purpose of employee protection, to provide for emergency response meeting the requirements of WAC 296-62-3110 and to address as appropriate site analysis, engineering controls, maximum exposure limits, hazardous waste handling procedures and uses of new technologies.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31405, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31410 Hazard communication program requirements under RCRA. The employer must implement a hazard communication program meeting the requirements of chapter 296-62 WAC, Part C, as part of the employer's safety and health program.

Note: The exemption for hazardous waste provided in WAC 296-62-054 is applicable to this section.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31410, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31415 Medical surveillance program requirements under RCRA. The employer must develop and implement a medical surveillance program meeting the requirements of WAC 296-62-3050.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31415, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31420 Decontamination program requirements under RCRA. The employer must develop and implement a decontamination procedure meeting the requirements of WAC 296-62-3100 through 296-62-31015.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31420, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31425 New technology programs requirements under RCRA. The employer must develop and implement procedures meeting the requirements of WAC 296-62-3138 for introducing new and innovative equipment into the workplace.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31425, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31430 Material handling program requirements under RCRA. Where employees will be handling drums or containers, the employer must develop and implement procedures meeting the requirements of WAC 296-62-3090 (2) through (8), as well as WAC 296-62-30910 and 296-62-30935, prior to starting such work.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31430, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31435 Training program for new employees under RCRA. The employer must develop and implement a training program, which is part of the employer's safety and health program, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not to endanger themselves or other employees. The initial training must be for 24 hours and refresher training must be for eight hours annually. Employees who have received the initial training required by this section shall be given a written certificate attesting that they have successfully completed the necessary training.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31435, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31440 Training program for current employees. Employers who can show by an employee's previous work experience and/or training that the employee has had training equivalent to the initial training required by this section, must be considered as meeting the initial training requirements of this section as to that employee. Equivalent training includes the training that existing employees might have already received from actual site work experience. Current employees must receive eight hours of refresher training annually.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31440, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31445 RCRA requirements for trainers. Trainers who teach initial training must have satisfactorily completed a training course for teaching the subjects they are expected to teach or they must have the academic credentials and instruction experience necessary to demonstrate a good command of the subject matter of the courses and competent instructional skills.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31445, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31450 Emergency response program requirements under RCRA.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31450, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31455 Emergency response plan under RCRA. An emergency response plan must be developed and implemented by all employers. The plan does not need to duplicate any of the subjects fully addressed in the employer's contingency planning required by permits, such as those issued by the United States Environmental Protection Agency, provided that the contingency plan is made part of the emergency response plan. The emergency response plan must be a written portion of the employer's safety and health program. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of WAC 296-62-31450 through 296-62-31470 if they provide an emergency action plan meeting the requirements in WAC 296-24-567.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31455, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31460 Elements of an emergency response plan under RCRA. The employer must develop an emergency response plan for emergencies. The plan must address the following areas to the extent that they are not addressed in any specific program required in this part:

- (1) Preemergency planning and coordination with outside parties.
- (2) Personnel roles, lines of authority, and communication.
- (3) Emergency recognition and prevention.
- (4) Safe distances and places of refuge.
- (5) Site security and control.
- (6) Evacuation routes and procedures.
- (7) Decontamination procedures.
- (8) Emergency medical treatment and first aid.
- (9) Emergency alerting and response procedures.
- (10) Critique of response and follow-up.
- (11) PPE and emergency equipment.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31460, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31465 Training requirements for emergency response under RCRA. (1) Training for emergency response employees must be completed before they are called upon to perform in real emergencies. The training must cover the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn, and procedures for handling emergency incidents.

Exception #1: An employer need not train all employees to the degree specified if the employer divides the workforce in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt to control activities for which they are not trained.

Exception #2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside fully trained emergency response team for assistance.

(2) Employee members of TSD facility emergency response organizations must be trained to a level of competence in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to overexposure from health hazards or injury to themselves and

other employees; and in the recognition of subsequent symptoms which may result from overexposures.

(3) The employer must certify that each covered employee has attended and successfully completed the training required in this subsection, or must certify the employee's competency at least yearly. The method used to demonstrate competency for certification of training must be recorded and maintained by the employer.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31465, filed 3/23/99, effective 6/23/99.]

WAC 296-62-31470 Procedures for handling emergency incidents under RCRA. (1) In addition to the elements for the emergency response plan required in WAC 296-62-31460, the following elements must be included for emergency response plans to the extent that they do not repeat any information already contained in the emergency response plan:

(a) Site topography, layout, and prevailing weather conditions.

(b) Procedures for reporting incidents to local, state, and federal governmental agencies.

(2) The emergency response plan must be compatible and integrated with the disaster, fire, and/or emergency response plans of local, state, and federal agencies.

(3) The emergency response plan must be rehearsed regularly as part of the overall training program for site operations.

(4) The site emergency response plan must be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.

(5) An employee alarm system must be installed in accordance with WAC 296-24-631 to notify employees of an emergency situation; to stop work activities if necessary; to lower background noise in order to speed communication; and to begin emergency procedures.

(6) Based upon the information available at time of the emergency, the employer must evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the site emergency response plan.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31470, filed 3/23/99, effective 6/23/99.]

WAC 296-62-3152 Appendices to Part P—Hazardous waste operations and TSD facilities.

Note: The following appendices serve as nonmandatory guidelines to assist employees and employers in complying with the appropriate requirements of this part. However, WAC 296-62-3060 through 296-62-30615 makes mandatory in certain circumstances the use of Level A and Level B personal protective equipment protection.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3152, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3152, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3152, filed 10/6/88, effective 11/7/88.]

WAC 296-62-3160 Appendix A—Personal protective equipment test methods. This appendix sets forth the nonmandatory examples of tests which may be used to evaluate compliance with WAC 296-62-3060. Other tests and other challenge agents may be used to evaluate compliance.

(1) Totally-encapsulating chemical protective suit pressure test.

(a) Scope.

(i) This practice measures the ability of a gas tight totally-encapsulating chemical protective suit material, seams, and closures to maintain a fixed positive pressure. The results of this practice allow the gas tight integrity of a total-encapsulating chemical protective suit to be evaluated.

(ii) Resistance of the suit materials to permeation, penetration, and degradation by specific hazardous substances is not determined by this test method.

(b) Definition of terms.

(i) "Totally-encapsulated chemical protective suit (TECP suit)" means a full body garment which is constructed of protective clothing materials; covers the wearer's torso, head, arms, and legs; may cover the wearer's hands and feet with tightly attached gloves and boots; completely encloses the wearer and respirator by itself or in combination with the wearer's gloves and boots.

(ii) "Protective clothing material" means any material or combination of materials used in an item of clothing for the purpose of isolating parts of the body from direct contact with a potentially hazardous liquid or gaseous chemicals.

(iii) "Gas tight" means for the purpose of this test method the limited flow of a gas under pressure from the inside of a TECP suit to atmosphere at a prescribed pressure and time interval.

(c) Summary of test method. The TECP suit is visually inspected and modified for the test. The test apparatus is attached to the suit to permit inflation to the pretest suit expansion pressure for removal of suit wrinkles and creases. The pressure is lowered to the test pressure and monitored for three minutes. If the pressure drop is excessive, the TECP suit fails the test and is removed from service. The test is repeated after leak location and repair.

(d) Required supplies.

(i) Source of compressed air.

(ii) Test apparatus for suit testing including a pressure measurement device with a sensitivity of at least 1/4 inch water gauge.

(iii) Vent valve closure plugs or sealing tape.

(iv) Soapy water solution and soft brush.

(v) Stopwatch or appropriate timing device.

(e) Safety precautions. Care must be taken to provide the correct pressure safety devices required for the source of compressed air used.

(f) Test procedure. Prior to each test, the tester must perform a visual inspection of the suit. Check the suit for seam integrity by visually examining the seams and gently pulling on the seams. Ensure that all air supply lines, fittings, visor, zippers, and valves are secure and show no signs of deterioration.

(i) Seal off the vent valves along with any other normal inlet or exhaust points (such as umbilical air line fittings or facepiece opening) with tape or other appropriate means (caps, plugs, fixture, etc.). Care should be exercised in the sealing process not to damage any of the suit components.

(ii) Close all closure assemblies.

(iii) Prepare the suit for inflation by providing an improvised connection point on the suit for connecting an airline.

Attach the pressure test apparatus to the suit to permit suit inflation from a compressed air source equipped with a pressure indicating regulator. The leak tightness of the pressure test apparatus should be tested before and after each test by closing off the end of the tubing attached to the suit and assuring a pressure of three inches water gauge for three minutes can be maintained. If a component is removed for the test, that component must be replaced and a second test conducted with another component removed to permit a complete test of the ensemble.

(iv) The pretest expansion pressure (A) and the suit test pressure (B) must be supplied by the suit manufacturer, but in no case shall they be less than (A)= 3 inches water gauge and (B)= 2 inches water gauge. The ending suit pressure (C) must be no less than eighty percent of the test pressure (B); i.e., the pressure drop shall not exceed twenty percent of the test pressure (B).

(v) Inflate the suit until the pressure inside is equal to pressure (A), the pretest expansion suit pressure. Allow at least one minute to fill out the wrinkles in the suit. Release sufficient air to reduce the suit pressure to pressure (B), the suit test pressure. Begin timing. At the end of three minutes, record the suit pressure as pressure (C), the ending suit pressure. The difference between the suit test pressure and the ending suit test pressure (B)-(C) must be defined as the suit pressure drop.

(vi) If the suit pressure drop is more than twenty percent of the suit test pressure (B) during the three minute test period, the suit fails the test and must be removed from service.

(g) Retest procedure.

(i) If the suit fails the test check for leaks by inflating the suit to pressure (A) and brushing or wiping the entire suit (including seams, closures, lens gaskets, glove-to-sleeve joints, etc.) with a mild soap and water solution. Observe the suit for the formation of soap bubbles, which is an indication of a leak. Repair all identified leaks.

(ii) Retest the TECP suit as outlined in (f) of this subsection.

(h) Report. Each TECP suit tested by this practice must have the following information recorded.

(i) Unique identification number, identifying brand name, date of purchase, material of construction, and unique fit features; e.g., special breathing apparatus.

(ii) The actual values for test pressures (A), (B), and (C) must be recorded along with the specific observation times. If the ending pressure (C) is less than eighty percent of the test pressure (B), the suit must be identified as failing the test. When possible, the specific leak location must be identified in the test records. Retest pressure data must be recorded as an additional test.

(iii) The source of the test apparatus used must be identified and the sensitivity of the pressure gauge must be recorded.

(iv) Records must be kept for each pressure test even if repairs are being made at the test location.

Caution. Visually inspect all parts of the suit to be sure they are positioned correctly and secured tightly before putting the suit back into service. Special care should be taken to examine each exhaust valve to make sure it is not blocked.

Care should also be exercised to assure that the inside and outside of the suit is completely dry before it is put into storage.

(2) Totally-encapsulating chemical protective suit qualitative leak test.

(a) Scope.

(i) This practice semiquantitatively tests gas tight totally-encapsulating chemical protective suit integrity by detecting inward leakage of ammonia vapor. Since no modifications are made to the suit to carry out this test, the results from this practice provide a realistic test for the integrity of the entire suit.

(ii) Resistance of the suit materials to permeation, penetration, and degradation is not determined by this test method. ASTM test methods are available to test suit materials for those characteristics and the tests are usually conducted by the manufacturers of the suits.

(b) Definition of terms.

(i) "Totally-encapsulated chemical protective suit (TECP suit)" means a full body garment which is constructed of protective clothing materials; covers the wearer's torso, head, arms, and legs; may cover the wearer's hands and feet with tightly attached gloves and boots; completely encloses the wearer and respirator by itself or in combination with the wearer's gloves and boots.

(ii) "Protective clothing material" means any material or combination of materials used in an item of clothing for the purpose of isolating parts of the body from direct contact with a potentially hazardous liquid or gaseous chemicals.

(iii) "Gas tight" means for the purpose of this test method the limited flow of a gas under pressure from the inside of a TECP suit to atmosphere at a prescribed pressure and time interval.

(iv) "Intrusion coefficient." A number expressing the level of protection provided by a gas tight totally-encapsulating chemical protective suit. The intrusion coefficient is calculated by dividing the test room challenge agent concentration by the concentration of challenge agent found inside the suit. The accuracy of the intrusion coefficient is dependent on the challenge agent monitoring methods. The larger the intrusion coefficient, the greater the protection provided by the TECP suit.

(c) Summary of recommended practice. The volume of concentrated aqueous ammonia solution (ammonia hydroxide, NH_4OH) required to generate the test atmosphere is determined using the directions outlined in WAC 296-62-3160 (2)(f)(i). The suit is donned by a person wearing the appropriate respiratory equipment (either a positive pressure self-contained breathing apparatus or a supplied air respirator) and worn inside the enclosed test room. The concentrated aqueous ammonia solution is taken by the suited individual into the test room and poured into an open plastic pan. A two-minute evaporation period is observed before the test room concentration is measured using a high range ammonia length of stain detector tube. When the ammonia reaches a concentration of between 1000 and 1200 ppm, the suited individual starts a standardized exercise protocol to stress and flex the suit. After this protocol is completed the test room concentration is measured again. The suited individual exits the test room and his stand-by person measures the ammonia

concentration inside the suit using a low range ammonia length of stain detector tube or other more sensitive ammonia detector. A stand-by person is required to observe the test individual during the test procedure, aid the person in donning and doffing the TECP suit and monitor the suit interior. The intrusion coefficient of the suit can be calculated by dividing the average test area concentration by the interior suit concentration. A colorimetric indicator strip of bromophenol blue is placed on the inside of the suit facepiece lens so that the suited individual is able to detect a color change and know if the suit has a significant leak. If a color change is observed the individual should leave the test room immediately.

(d) Required supplies.

(i) A supply of concentrated aqueous ammonium hydroxide, 58% by weight.

(ii) A supply of bromophenol/blue indicating paper, sensitive to 5-10 ppm ammonia or greater over a two-minute period of exposure [pH 3.0 (yellow) to pH 4.6 (blue)].

(iii) A supply of high range (0.5-10 volume percent) and low range (5-700 ppm) detector tubes for ammonia and the corresponding sampling pump. More sensitive ammonia detectors can be substituted for the low range detector tubes to improve the sensitivity of this practice.

(iv) A shallow plastic pan (PVC) at least 12":14":1" and a half pint plastic container (PVC) with tightly closing lid.

(v) A graduated cylinder or other volumetric measuring device of at least fifty milliliters in volume with an accuracy of at least ± 1 milliliters.

(e) Safety precautions.

(i) Concentrated aqueous ammonium hydroxide, NH_4OH is a corrosive volatile liquid requiring eye, skin, and respiratory protection. The person conducting the test must review the MSDS for aqueous ammonia.

(ii) Since the established permissible exposure limit for ammonia is 35 ppm as a 15 minute STEL, only persons wearing a positive pressure self-contained breathing apparatus or a supplied air respirator must be in the chamber. Normally only the person wearing the total-encapsulating suit will be inside the chamber. A stand-by person must have a self-contained breathing apparatus, or a positive pressure supplied air respirator available to enter the test area should the suited individual need assistance.

(iii) A method to monitor the suited individual must be used during this test. Visual contact is the simplest but other methods using communication devices are acceptable.

(iv) The test room must be large enough to allow the exercise protocol to be carried out and then to be ventilated to allow for easy exhaust of the ammonia test atmosphere after the test(s) are completed.

(v) Individuals must be medically screened for the use of respiratory protection and checked for allergies to ammonia before participating in this test procedure.

(f) Test procedure.

(i) Measure the test area to the nearest foot and calculate its volume in cubic feet. Multiply the test area volume by 0.2 milliliters of concentrated aqueous ammonia per cubic foot of test area volume to determine the approximate volume of concentrated aqueous ammonia required to generate 1000 ppm in the test area.

(A) Measure this volume from the supply of concentrated ammonia and place it into a closed plastic container.

(B) Place the container, several high range ammonia detector tubes and the pump in the clean test pan and locate it near the test area entry door so that the suited individual has easy access to these supplies.

(ii) In a noncontaminated atmosphere, open a presealed ammonia indicator strip and fasten one end of the strip to the inside of the suit face shield lens where it can be seen by the wearer. Moisten the indicator strip with distilled water. Care must be taken not to contaminate the detector part of the indicator paper by touching it. A small piece of masking tape or equivalent should be used to attach the indicator strip to the interior of the suit face shield.

(iii) If problems are encountered with this method of attachment the indicator strip can be attached to the outside of the respirator facepiece being used during the test.

(iv) Don the respiratory protective device normally used with the suit, and then don the TECP suit to be tested. Check to be sure all openings which are intended to be sealed (zippers, gloves, etc.) are completely sealed. DO NOT, however, plug off any venting valves.

(v) Step into the enclosed test room such as a closet, bathroom, or test booth, equipped with an exhaust fan. No air should be exhausted from the chamber during the test because this will dilute the ammonia challenge concentrations.

(vi) Open the container with the premeasured volume of concentrated aqueous ammonia within the enclosed test room, and pour the liquid into the empty plastic test pan. Wait two minutes to allow for adequate volatilization of the concentrated aqueous ammonia. A small mixing fan can be used near the evaporation pan to increase the evaporation rate of the ammonia solution.

(vii) After two minutes a determination of the ammonia concentration within the chamber should be made using the high range colorimetric detector tube. A concentration of 1000 ppm ammonia or greater must be generated before the exercises are started.

(viii) To test the integrity of the suit the following four minute exercise protocol should be followed:

(A) Raising the arms above the head with at least fifteen raising motions completed in one minute.

(B) Walking in place for one minute with at least fifteen raising motions of each leg in a one-minute period.

(C) Touching the toes with at least ten complete motions of the arms from above the head to touching of the toes in a one-minute period.

(D) Knee bends with at least ten complete standing and squatting motions in a one-minute period.

(ix) If at any time during the test the colorimetric indicating paper should change colors the test should be stopped and (f)(x) and (xi) of this subsection initiated.

(x) After completion of the test exercise, the test area concentration should be measured again using the high range colorimetric detector tube.

(xi) Exit the test area.

(xii) The opening created by the suit zipper or other appropriate suit penetration should be used to determine the ammonia concentration in the suit with the low range length

of stain detector tube or other ammonia monitor. The internal TECP suit air should be sampled far enough from the enclosed test area to prevent a false ammonia reading.

(xiii) After completion of the measurement of the suit interior ammonia concentration the test is concluded and the suit is doffed and the respirator removed.

(xiv) The ventilating fan for the test room should be turned on and allowed to run for enough time to remove the ammonia gas. The fan must be vented to the outside of the building.

(xv) Any detectable ammonia in the suit interior (5 ppm ammonia (NH₃) or more for the length of stain detector tube) indicates the suit failed the test. When other ammonia detectors are used, a lower level of detection is possible and it should be specified as the pass/fail criteria.

(xvi) By following this test method an intrusion coefficient of approximately two hundred or more can be measured with the suit in a completely operational condition. If the intrusion coefficient is 200 or more, then the suit is suitable for emergency response and field use.

(g) Retest procedures.

(i) If the suit fails this test, check for leaks by following the pressure test in test (A) above.

(ii) Retest the TECP suit as outlined in the test procedure in (f) of this subsection.

(h) Report.

(i) Each gas tight totally-encapsulating chemical protective suit tested by this practice must have the following information recorded.

(A) Unique identification number, identifying brand name, date of purchase, material of construction, and unique suit features; e.g., special breathing apparatus.

(B) General description of test room used for test.

(C) Brand name and purchase date of ammonia detector strips and color change data.

(D) Brand name, sampling range, and expiration date of the length of stain ammonia detector tubes. The brand name and model of the sampling pump should also be recorded. If another type of ammonia detector is used, it should be identified along with its minimum detection limit for ammonia.

(E) Actual test results must list the two test area concentrations, their average, the interior suit concentration, and the calculated intrusion coefficient. Retest data must be recorded as an additional test.

(ii) The evaluation of the data must be specified as "suit passed" or "suit failed" and the date of the test. Any detectable ammonia (5 ppm or greater for the length of stain detector tube) in the suit interior indicates the suit fails this test. When other ammonia detectors are used, a lower level of detection is possible and it should be specified as the pass/fail criteria.

Caution. Visually inspect all parts of the suit to be sure they are positioned correctly and secured tightly before putting the suit back into service. Special care should be taken to examine each exhaust valve to make sure it is not blocked.

Care should also be exercised to assure that the inside and outside of the suit is completely dry before it is put into storage.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3160, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 91-24-

017 (Order 91-07), § 296-62-3160, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-3160, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3160, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3160, filed 10/6/88, effective 11/7/88.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-3180 Appendix C—Compliance guidelines. (1) Occupational safety and health program. Each hazardous waste site clean-up effort will require an occupational safety and health program headed by the site coordinator or the employer's representative. The purpose of the program will be the protection of employees at the site and will be an extension of the employer's overall safety and health program. The program will need to be developed before work begins on the site and implemented as work proceeds as stated in WAC 296-62-3010 through 296-62-30145. The program is to facilitate coordination and communication of safety and health issues among personnel responsible for the various activities which will take place at the site. It will provide the overall means for planning and implementing the needed safety and health training and job orientation of employees who will be working at the site. The program will provide the means for identifying and controlling worksite hazards and the means for monitoring program effectiveness. The program will need to cover the responsibilities and authority of the site coordinator or the employer's manager on the site for the safety and health of employees at the site, and the relationships with contractors or support services as to what each employer's safety and health responsibilities are for their employees on the site. Each contractor on the site needs to have its own safety and health program so structured that it will smoothly interface with the program of the site coordinator or principal contractor. Also those employers involved with treating, storing, or disposal of hazardous waste as covered in WAC 296-62-3140 must have implemented a safety and health plan for their employees. This program is to include the hazard communication program required in WAC 296-62-31405 and the training required in WAC 296-62-31420 and 296-62-31425 as parts of the employers comprehensive overall safety and health program. This program is to be in writing.

(a) Each site or workplace safety and health program will need to include the following:

(i) Policy statements of the line of authority and accountability for implementing the program, the objectives of the program and the role of the site safety and health officer or manager and staff;

(ii) Means or methods for the development of procedures for identifying and controlling workplace hazards at the site;

(iii) Means or methods for the development and communication to employees of the various plans, work rules, standard operating procedures and practices that pertain to individual employees and supervisors;

(iv) Means for the training of supervisors and employees to develop the needed skills and knowledge to perform their work in a safe and healthful manner;

(v) Means to anticipate and prepare for emergency situations; and

(vi) Means for obtaining information feedback to aid in evaluating the program and for improving the effectiveness of the program. The management and employees should be trying continually to improve the effectiveness of the program thereby enhancing the protection being afforded those working on the site.

(b) Accidents on the site should be investigated to provide information on how such occurrences can be avoided in the future. When injuries or illnesses occur on the site or workplace, they will need to be investigated to determine what needs to be done to prevent this incident from occurring again. Such information will need to be used as feedback on the effectiveness of the program and the information turned into positive steps to prevent any reoccurrence. Receipt of employee suggestions or complaints relating to safety and health issues involved with site or workplace activities is also a feedback mechanism that can be used effectively to improve the program and may serve in part as an evaluative tool(s).

(c) For the development and implementation of the program to be the most effective, professional safety and health personnel should be used. Certified safety professionals, board-certified industrial hygienists, or registered professional safety engineers are good examples of professional stature for safety and health managers who will administer the employer's program.

(2) The training programs for employees subject to the requirements of WAC 296-62-3040 through 296-62-30465 are expected to address: The safety and health hazards employees should expect to find on sites; what control measures or techniques are effective for those hazards; what monitoring procedures are effective in characterizing exposure levels; what makes an effective employer's safety and health program; what a site safety and health plan should include; hands-on training with personal protective equipment and clothing they may be expected to use; the contents of the WISHA standard relevant to the employee's duties and functions; and, employee's responsibilities under WISHA and other regulations. Supervisors will need training in their responsibilities under the safety and health program and its subject areas such as the spill containment program, the personal protective equipment program, the medical surveillance program, the emergency response plan and other areas.

(a) The training programs for employees subject to the requirements of WAC 296-62-3140 through 296-62-31465 should address: The employer's safety and health program elements impacting employees; the hazard communication program; the medical surveillance program; the hazards and the controls for such hazards that employees need to know for their job duties and functions. All require annual refresher training.

(b) The training programs for employees covered by the requirements of WAC 296-62-31110 will address those competencies required for the various levels of response such as: The hazards associated with hazardous substances; hazard identification and awareness; notification of appropriate persons; the need for and use of personal protective equipment including respirators; the decontamination procedures to be used; preplanning activities for hazardous substance incidents including the emergency response plan; company stan-

standard operating procedures for hazardous substance emergency responses; the use of the incident command system and other subjects. Hands-on training should be stressed whenever possible. Critiques done after an incident which include any evaluation of what worked, and what did not, and how can we do better the next time, may be counted as training time.

(3) Decontamination. Decontamination procedures will be tailored to the specific hazards of the site and will vary in complexity, and number of steps, depending on the level of hazard and the employee's exposure to the hazard. Decontamination procedures and PPE decontamination methods will vary depending upon the specific substance, since one procedure or method will not work for all substances. Evaluation of decontamination methods and procedures should be performed, as necessary, to assure that employees are not exposed to hazards by reusing PPE. References in WAC 296-62-3190, Appendix D, may be used for guidance in establishing an effective decontamination program. In addition, the United States Coast Guard Manual, "Policy Guidance for Response to Hazardous Chemical Releases," United States Department of Transportation, Washington, D.C. (COM-DTINST M16465.30), is a good reference for establishing an effective decontamination program.

(4) Emergency response plans. States, along with designated districts within the states, will be developing or have developed emergency response plans. These state and district plans are to be used in the emergency response plans called for in this standard. Each employer needs to assure that its emergency response plan is compatible with the local plan. The major reference being used to aid in developing the state and local district plans is the Hazardous Materials Emergency Planning Guide, NRT-1. The current Emergency Response Guidebook from the United States Department of Transportation, CMA's CHEMTREC and the Fire Service Emergency Management Handbook may also be used as resources.

Employers involved with treatment, storage, and disposal facilities for hazardous waste, which have the required contingency plan called for by their permit, would not need to duplicate the same planning elements. Those items of the emergency response plan that are properly addressed in the contingency plan may be substituted into the emergency response plan required in WAC 296-62-410, Part R, Emergency response to hazardous substance release or otherwise kept together for employer and employee use.

(5) Personal protective equipment programs. The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biologic hazards that may be encountered at a hazardous substance site.

(a) As discussed in Appendix B, no single combination of protective equipment and clothing is capable of protecting against all hazards. Thus PPE should be used in conjunction with other protective methods and its effectiveness evaluated periodically.

(b) The use of PPE can itself create significant worker hazards, such as heat stress, physical and psychological stress, and impaired vision, mobility, and communication. For any given situation, equipment and clothing will be

selected that provide an adequate level of protection. However, over-protection, as well as under-protection, can be hazardous and should be avoided where possible.

(c) Two basic objectives of any PPE program will be to protect the wearer from safety and health hazards, and to prevent injury to the wearer from incorrect use and/or malfunction of the PPE. To accomplish these goals, a comprehensive PPE program will include hazard identification, medical monitoring, environmental surveillance, selection, use, maintenance, and decontamination of PPE and its associated training.

(d) The written PPE program will include policy statements, procedures, and guidelines. Copies will be made available to all employees and a reference copy will be made available at the worksite. Technical data on equipment, maintenance manuals, relevant regulations, and other essential information will also be collected and maintained.

(6) Medical surveillance programs.

(a) Workers handling hazardous substances may be exposed to toxic chemicals, safety hazards, biologic hazards, and radiation. Therefore, a medical surveillance program is essential to assess and monitor workers' health and fitness for employment in hazardous waste operations and during the course of work; to provide emergency and other treatment as needed; and to keep accurate records for future reference.

(b) *The Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* developed by the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), the United States Coast Guard (USCG), and the Environmental Protection Agency (EPA); October 1985 provides an excellent example of the types of medical testing that should be done as part of a medical surveillance program.

(7) New technology and spill containment programs. Where hazardous substances may be released by spilling from a container that will expose employees to the hazards of the materials, the employer will need to implement a program to contain and control the spilled material. Diking and ditching, as well as use of absorbents like diatomaceous earth, are traditional techniques which have proven to be effective over the years. However, in recent years new products have come into the marketplace, the use of which complement and increase the effectiveness of these traditional methods. These new products also provide emergency responders and others with additional tools or agents to use to reduce the hazards of spilled materials.

These agents can be rapidly applied over a large area and can be uniformly applied or otherwise can be used to build a small dam, thus improving the workers' ability to control spilled material. These application techniques enhance the intimate contact between the agent and the spilled material allowing for the quickest effect by the agent or quickest control of the spilled material. Agents are available to solidify liquid spilled materials, to suppress vapor generation from spilled materials, and to do both. Some special agents, which when applied as recommended by the manufacturer, will react in a controlled manner with the spilled material to neutralize acids or caustics, or greatly reduce the level of hazard of the spilled material.

There are several modern methods and devices for use by emergency response personnel or others involved with spill control efforts to safely apply spill control agents to control spilled material hazards. These include portable pressurized applicators similar to hand-held portable fire extinguishing devices, and nozzle and hose systems similar to portable fire fighting foam systems which allow the operator to apply the agent without having to come into contact with the spilled material. The operator is able to apply the agent to the spilled material from a remote position.

The solidification of liquids provides for rapid containment and isolation of hazardous substance spills. By directing the agent at run-off points or at the edges of the spill, the reactant solid will automatically create a barrier to slow or stop the spread of the material. Clean-up of hazardous substances as greatly improved when solidifying agents, acid or caustic neutralizers, or activated carbon absorbents are used. Properly applied, these agents can totally solidify liquid hazardous substances or neutralize or absorb them, which results in materials which are less hazardous and easier to handle, transport, and dispose of. The concept of spill treatment, to create less hazardous substances, will improve the safety and level of protection of employees working at spill clean-up operations or emergency response operations to spills of hazardous substances.

The use of vapor suppression agents for volatile hazardous substances, such as flammable liquids and those substances which present an inhalation hazard, is important for protecting workers. The rapid and uniform distribution of the agent over the surface of the spilled material can provide quick vapor knockdown. There are temporary and long-term foam-type agents which are effective on vapors and dusts, and activated carbon adsorption agents which are effective for vapor control and soaking-up of the liquid. The proper use of hose lines or hand-held portable pressurized applicators provides good mobility and permits the worker to deliver the agent from a safe distance without having to step into the untreated spilled material. Some of these systems can be recharged in the field to provide coverage of larger spill areas than the design limits of a single charged applicator unit. Some of the more effective agents can solidify the liquid flammable hazardous substances and at the same time elevate the flashpoint above 140 deg. F so the resulting substance may be handled as a nonhazardous waste material if it meets the United States Environmental Protection Agency's 40 CFR part 261 requirements (see particularly Sec. 261.21).

All workers performing hazardous substance spill control work are expected to wear the proper protective clothing and equipment for the materials present and to follow the employer's established standard operating procedures for spill control. All involved workers need to be trained in the established operating procedures; in the use and care of spill control equipment; and in the associated hazards and control of such hazards of spill containment work.

These new tools and agents are the things that employers will want to evaluate as part of their new technology program. The treatment of spills of hazardous substances or wastes at an emergency incident as part of the immediate spill containment and control efforts is sometimes acceptable to

EPA and a permit exception is described in 40 CFR 264.1 (g)(8) and 265.1 (c)(11).

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3180, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3180, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3180, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3180, filed 10/6/88, effective 11/7/88.]

WAC 296-62-3190 Appendix D—References. The following references may be consulted for further information on the subject of this notice:

- (1) *OSHA Instruction DFO CPL 2.70 - January 29, 1986, Special Emphasis Program: Hazardous Waste Sites.*
- (2) *OSHA Instruction DFO CPL 2-2.37A - January 29, 1986, Technical Assistance and Guidelines for Superfund and Other Hazardous Waste Site Activities.*
- (3) *OSHA Instruction DTS CPL 2.74 - January 29, 1986, Hazardous Waste Activity Form, OSHA 175.*
- (4) *Hazardous Waste Inspections Reference Manual, U.S. Department of Labor, Occupational Safety and Health Administration, 1986.*
- (5) *Memorandum of Understanding Among the National Institute for Occupational Safety and Health, the Occupational Safety and Health Administration, the United States Coast Guard, and the United States Environmental Protection Agency; Guidance for Worker Protection During Hazardous Waste Site Investigations and Clean-up and Hazardous Substance Emergencies; December 18, 1980.*
- (6) *National Priorities List, 1st Edition, October 1984; U.S. Environmental Protection Agency, Revised periodically.*
- (7) *Preparation of a Site Safety Plan, Field Standard Operating Procedures (F.S.O.P.) 9; U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Hazardous Response Support Division, April 1985.*
- (8) *Standard Operating Safety Guidelines; U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Hazardous Response Support Division, Environmental Response Team; November 1984.*
- (9) *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), U.S. Coast Guard (USCG), and Environmental Protection Agency (EPA); October 1985.*
- (10) *Protecting Health and Safety at Hazardous Waste Sites: An Overview, U.S. Environmental Protection Agency, EPA/625/9-85/006; September 1985.*
- (11) *Hazardous Waste Sites and Hazardous Substance Emergencies, NIOSH Worker Bulletin, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health; December 1982.*
- (12) *Personal Protective Equipment for Hazardous Materials Incidents: A Selection Guide; U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health; October 1984.*

(13) *Report to the Congress on Hazardous Materials Training, Planning and Preparedness, Federal Emergency Management Agency, Washington, D.C., July 1986.*

(14) *Community Teamwork: Working Together to Promote Hazardous Materials Transportation Safety. U.S. Department of Transportation, Washington, D.C., May 1983.*

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3190, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW, 90-20-091 (Order 90-14), § 296-62-3190, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3190, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3190, filed 10/6/88, effective 11/7/88.]

WAC 296-62-3195 Appendix E—Training curriculum guidelines. The following nonmandatory general criteria may be used for assistance in developing site-specific training curriculum used to meet the training requirements of WAC 296-62-3040 through 296-62-30465, 296-62-31435 through 296-62-31445, 296-62-31465, 296-62-4102 through 296-62-41021, and 296-62-41023.

These are generic guidelines and they are not presented as a complete training curriculum for any specific employer. Site-specific training programs must be developed on the basis of a needs assessment of the hazardous waste site, RCRA/TSD, or emergency response operation in accordance with this chapter (chapter 296-62 WAC, Part P and Part R).

The guidance set forth here presents a highly effective program that in the areas covered would meet or exceed the regulatory requirements. In addition, other approaches could meet the regulatory requirements.

Suggested general criteria:

Definitions:

"Competent" means possessing the skills, knowledge, experience, and judgment to perform assigned tasks or activities satisfactorily as determined by the employer.

"Demonstration" means the showing by actual use of equipment or procedures.

"Hands-on training" means training in a simulated work environment that permits each student to have experience performing tasks, making decisions, or using equipment appropriate to the job assignment for which the training is being conducted.

"Initial training" means training required prior to beginning work.

"Lecture" means an interactive discourse with a class lead by an instructor.

"Proficient" means meeting a stated level of achievement.

"Site-specific" means individual training directed to the operations of a specific job site.

"Training hours" means the number of hours devoted to lecture, learning activities, small group work sessions, demonstration, evaluations, or hands-on experience.

Suggested core criteria:

(1) Training facility. The training facility should have available sufficient resources, equipment, and site locations to perform concise and hands-on training when appropriate. Training facilities should have sufficient organization, support staff, and services to conduct training in each of the courses offered.

(2) Training director. Each training program should be under the direction of a training director who is responsible for the program. The training director should have a minimum of two years of employee education experience.

(3) Instructors. Instructors should be deemed competent on the basis of previous documented experience in their area of instruction, successful completion of a "train-the-trainer" program specific to the topics they will teach, and an evaluation of instructional competence by the training director.

(a) Instructors should be required to maintain professional competency by participating in continuing education or professional development programs or by successfully completing an annual refresher course and having an annual review by the training director.

(b) The annual review by the training director should include observation of an instructor's delivery, a review of those observations with the trainer, and an analysis of any instructor or class evaluations completed by the students during the previous year.

(4) Course materials. The training director should approve all course materials to be used by the training provider. Course materials should be reviewed and updated at least annually. Materials and equipment should be in good working order and maintained properly.

(a) All written and audio-visual materials in training curricula should be peer reviewed by technically competent outside reviewers or by a standing advisory committee.

(b) Reviewers should possess expertise in the following disciplines where applicable: Occupational health, industrial hygiene and safety, chemical/environmental engineering, employee education, or emergency response. One or more of the peer reviewers should be an employee experienced in the work activities to which the training is directed.

(5) Students. The program for accepting students should include:

(a) Assurance that the student is or will be involved in work where chemical exposures are likely and that the student possesses the skills necessary to perform the work.

(b) A policy on the necessary medical clearance.

(6) Ratios. Student-instructor ratios should not exceed thirty students per instructor. Hands-on activity requiring the use of personal protective equipment should have the following student-instructor ratios: For Level C or Level D personal protective equipment the ratio should be ten students per instructor. For Level A or Level B personal protective equipment the ratio should be five students per instructor.

(7) Proficiency assessment. Proficiency should be evaluated and documented by the use of a written assessment and a skill demonstration selected and developed by the training director and training staff. The assessment and demonstration should evaluate the knowledge and individual skills developed in the course of training. The level of minimum achievement necessary for proficiency must be specified in writing by the training director.

(a) If a written test is used, there should be a minimum of fifty questions. If a written test is used in combination with a skills demonstration, a minimum of twenty-five questions should be used. If a skills demonstration is used, the tasks chosen and the means to rate successful completion should be fully documented by the training director.

(b) The content of the written test or of the skill demonstration must be relevant to the objectives of the course.

The written test and skill demonstration should be updated as necessary to reflect changes in the curriculum and any update should be approved by the training director.

(c) The proficiency assessment methods, regardless of the approach or combination of approaches used, should be justified, documented and approved by the training director.

(d) The proficiency of those taking the additional courses for supervisors should be evaluated and documented by using proficiency assessment methods acceptable to the training director. These proficiency assessment methods must reflect the additional responsibilities borne by supervisory personnel in hazardous waste operations or emergency response.

(8) Course certificate. Written documentation should be provided to each student who satisfactorily completes the training course. The documentation should include:

(a) Student's name.

(b) Course title.

(c) Course date.

(d) Statement that the student has successfully completed the course.

(e) Name and address of the training provider.

(f) An individual identification number for the certificate.

(g) List of the levels of personal protective equipment used by the student to complete the course.

(i) This documentation may include a certificate and an appropriate wallet-sized laminated card with a photograph of the student and the above information.

(ii) When such course certificate cards are used, the individual identification number for the training certificate should be shown on the card.

(9) Recordkeeping. Training providers should maintain records listing the dates courses were presented, the names of the individual course attendees, the names of those students successfully completing each course, and the number of training certificates issued to each successful student. These records should be maintained for a minimum of five years after the date an individual participated in a training program offered by the training provider. These records should be available and provided upon the student's request or as mandated by law.

(10) Program quality control. The training director should conduct or direct an annual written audit of the training program. Program modifications to address deficiencies, if any, should be documented, approved, and implemented by the training provider. The audit and the program modification documents should be maintained at the training facility.

Suggested Program Quality Control Criteria:

Factors listed here are suggested criteria for determining the quality and appropriateness of employee health and safety training for hazardous waste operations and emergency response.

(1) Training plan. Adequacy and appropriateness of the training program's curriculum development, instructor training, distribution of course materials, and direct student training should be considered, including:

(a) The duration of training, course content, and course schedules/agendas;

(b) The different training requirements of the various target populations, as specified in the appropriate generic training curriculum;

(c) The process for the development of curriculum, which includes appropriate technical input, outside review, evaluation, program pretesting.

(d) The adequate and appropriate inclusion of hands-on, demonstration, and instruction methods;

(e) Adequate monitoring of student safety, progress, and performance during the training.

(2) Program management, training director, staff, and consultants. Adequacy and appropriateness of staff performance and delivering an effective training program should be considered, including:

(a) Demonstration of the training director's leadership in assuring quality of health and safety training;

(b) Demonstration of the competency of the staff to meet the demands of delivering high quality hazardous waste employee health and safety training;

(c) Organization charts establishing clear lines of authority;

(d) Clearly defined staff duties including the relationship of the training staff to the overall program;

(e) Evidence that the training organizational structure suits the needs of the training program;

(f) Appropriateness and adequacy of the training methods used by the instructors;

(g) Sufficiency of the time committed by the training director and staff to the training program;

(h) Adequacy of the ratio of training staff to students;

(i) Availability and commitment of the training program of adequate human and equipment resources in the areas of:

(i) Health effects;

(ii) Safety;

(iii) Personal protective equipment (PPE);

(iv) Operational procedures;

(v) Employee protection practices/procedures;

(j) Appropriateness of management controls;

(k) Adequacy of the organization and appropriate resources assigned to assure appropriate training;

(l) In the case of multiple-site training programs, adequacy of management of the satellite centers.

(3) Training facilities and resources. Adequacy and appropriateness of the facilities and resources for supporting the training program should be considered, including:

(a) Space and equipment to conduct the training;

(b) Facilities for representative hands-on training;

(c) In the case of multiple-site programs, equipment and facilities at the satellite centers;

(d) Adequacy and appropriateness of the quality control and evaluations program to account for instructor performance;

(e) Adequacy and appropriateness of the quality control and evaluation program to ensure appropriate course evaluation, feedback, updating, and corrective action;

(f) Adequacy and appropriateness of disciplines and expertise being used within the quality control and evaluation program;

(g) Adequacy and appropriateness of the role of student evaluations to provide feedback for training program improvement.

(4) Quality control and evaluation. Adequacy and appropriateness of quality control and evaluation plans for training programs should be considered, including:

(a) A balanced advisory committee and/or competent outside reviewers to give overall policy guidance;

(b) Clear and adequate definition of the composition and active programmatic role of the advisory committee or outside reviewers;

(c) Adequacy of the minutes or reports of the advisory committee or outside reviewers' meetings or written communication;

(d) Adequacy and appropriateness of the quality control and evaluations program to account for instructor performance;

(e) Adequacy and appropriateness of the quality control and evaluation program to ensure appropriate course evaluation, feedback, updating, and corrective action;

(f) Adequacy and appropriateness of disciplines and expertise being used within the quality control and evaluation program;

(g) Adequacy and appropriateness of the role of student evaluations to provide feedback for training program improvement.

(5) Students. Adequacy and appropriateness of the program for accepting students should be considered, including:

(a) Assurance that the student already possess the necessary skills for their job, including necessary documentation;

(b) Appropriateness of methods the program uses to ensure that recruits are capable of satisfactorily completing training;

(c) Review and compliance with any medical clearance policy.

(6) Institutional environment and administrative support. The adequacy and appropriateness of the institutional environment and administrative support system for the training program should be considered, including:

(a) Adequacy of the institutional commitment to the employee training program;

(b) Adequacy and appropriateness of the administrative structure and administrative support.

(7) Summary of evaluation questions. Key questions for evaluating the quality and appropriateness of an overall training program should include the following:

(a) Are the program objectives clearly stated?

(b) Is the program accomplishing its objectives?

(c) Are appropriate facilities and staff available?

(d) Is there an appropriate mix of classroom, demonstration, and hands-on training?

(e) Is the program providing quality employee health and safety training that fully meets the intent of regulatory requirements?

(f) What are the program's main strengths?

(g) What are the program's main weaknesses?

(h) What is recommended to improve the program?

(i) Are instructors instructing according to their training outlines?

(j) Is the evaluation tool current and appropriate for the program content?

(k) Is the course material current and relevant to the target group?

Suggested Training Curriculum Guidelines:

The following training curriculum guidelines are for those operations specifically identified in this Part P, as requiring training. Issues such as qualifications of instructors, training certification, and similar criteria appropriate to all categories of operations addressed in this Part P, have been covered in the preceding section and are not readdressed in each of the generic guidelines. Basic core requirements for training programs that are addressed include: (1) *General hazardous waste operations*; (2) *RCRA operations—Treatment, storage, and disposal facilities*.

(1) General hazardous waste operations and site-specific training.

(a) Off-site training. Training course content for hazardous waste operations, required by WAC 296-62-3040 through 296-62-30465, should include the following topics or procedures:

(i) Regulatory knowledge.

(A) A review of this Part P and the core elements of an occupational safety and health program.

(B) The content of a medical surveillance program as outlined in WAC 296-62-3050 through 296-62-30535.

(C) The content of an effective site safety and health plan consistent with the requirements of WAC 296-62-30135(2).

(D) Emergency response plan and procedures as outlined in WAC 296-24-567 and 296-62-3110 through 296-62-31110.

(E) Adequate illumination.

(F) Sanitation recommendation and equipment.

(G) Review and explanation of WISHA's hazard-communication standard chapter 296-62 WAC, Part C, and chapter 296-24 WAC, Part A-4, safety procedures for the control of hazardous energy (lockout/tagout).

(H) Review of other applicable standards including but not limited to those in the construction standards, chapter 296-155 WAC.

(I) Rights and responsibilities of employers and employees under applicable WISHA/OSHA and department of ecology (DOE)/Environmental Protection Association (EPA) regulations and laws.

(ii) Technical knowledge.

(A) Type of potential exposures to chemical, biological, and radiological hazards; types of human responses to these hazards and recognition of those responses; principles of toxicology and information about acute and chronic hazards; health and safety considerations of new technology.

(B) Fundamentals of chemical hazards including but not limited to vapor pressure, boiling points, flash points, pH, other physical and chemical properties.

(C) Fire and explosion hazards of chemicals.

(D) General safety hazards such as but not limited to electrical hazards, powered equipment hazards, motor vehicle hazards, walking-working surface hazards, excavation hazards, and hazards associated with working in hot and cold temperature extremes.

(E) Review and knowledge of confined space entry procedures in chapter 296-62 WAC, Part M.

(F) Work practices to minimize employee risk from site hazards.

(G) Safe use of engineering controls, equipment, and any new relevant safety technology or safety procedures.

(H) Review and demonstration of competency with air sampling and monitoring equipment that may be used in a site monitoring program.

(I) Container sampling procedures and safeguarding; general drum and container handling procedures including special requirement for laboratory waste packs, shock-sensitive wastes, and radioactive wastes.

(J) The elements of a spill control program.

(K) Proper use and limitations of material handling equipment.

(L) Procedures for safe and healthful preparation of containers for shipping and transport.

(M) Methods of communication including those used while wearing respiratory protection.

(iii) Technical skills.

(A) Selection, use maintenance, and limitations of personal protective equipment including the components and procedures for carrying out a respirator program to comply with chapter 296-62 WAC Part E, Respiratory Protection.

(B) Instruction in decontamination programs including personnel, equipment, and hardware; hands-on training including Levels A, B, and C ensembles and appropriate decontamination lines; field activities including the donning and doffing of protective equipment to a level commensurate with the employee's anticipated job function and responsibility and to the degree required by potential hazards.

(C) Sources for additional hazard information; exercises using relevant manuals and hazard coding systems.

(iv) Additional suggested items.

(A) A laminated, dated card or certificate with photo, denoting limitations and level of protection for which the employee is trained should be issued to those students successfully completing a course.

(B) Attendance should be required at all training modules, with successful completion of exercises and a final written or oral examination with at least fifty questions.

(C) A minimum of one-third of the program should be devoted to hands-on exercises.

(D) A curriculum should be established for the eight-hour refresher training required by WAC 296-62-30460, with delivery of such courses directed toward those areas of previous training that need improvement or reemphasis.

(E) A curriculum should be established for the required eight-hour training for supervisors. Demonstrated competency in the skills and knowledge provided in forty-hour and eighty-hour courses should be prerequisites for supervisor training.

(b) Refresher training. The eight-hour annual refresher training required in WAC 296-62-30460 should be conducted by qualified training providers. Refresher training should include at a minimum the following topics and procedures:

(i) Review of and retraining on relevant topics covered in the forty-hour and eighty-hour programs, as appropriate, using reports by the students on their work experiences.

(ii) Update on developments with respect to material covered in the forty-hour and eighty-hour courses.

(iii) Review of changes to pertinent provisions of DOE/EPA or WISHA/OSHA standards or laws.

(iv) Introduction of additional subject areas as appropriate.

(v) Hands-on review of new or altered PPE or decontamination equipment or procedures. Review of new developments in personal protective equipment.

(vi) Review of newly developed air and contaminant monitoring equipment.

(c) On-site training. The employer should provide employees engaged in hazardous waste site activities with information and training prior to initial assignment into their work area, as follows:

(i) The requirements of the hazard communication program including the location and availability of the written program, required lists of hazardous chemicals, and material safety data sheets.

(ii) Activities and locations in their work area where hazardous substance may be present.

(iii) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearances, or other evidence (sight, sound or smell)) of hazardous chemicals being released, and applicable alarms from monitoring devices that record chemical releases.

(iv) The physical and health hazards of substances known or potentially present in the work area.

(v) The measures employees can take to help protect themselves from worksite hazards, including specific procedures the employer has implemented.

(vi) An explanation of the labeling system and material safety data sheets and how employees can obtain and use appropriate hazard information.

(vii) The elements of the confined space program including special PPE, permits, monitoring requirements, communication procedures, emergency response, and applicable lockout procedures.

(d) The employer should provide hazardous waste employees with information and training and should provide a review and access to the site safety and health plan as follows:

(i) Names of personnel and alternate responsible for site safety and health.

(ii) Safety and health hazards present on the site.

(iii) Selection, use, maintenance, and limitations of personal protective equipment specific to the site.

(iv) Work practices by which the employee can minimize risks from hazards.

(v) Safe use of engineering controls and equipment available on site.

(vi) Safe decontamination procedures established to minimize employee contact with hazardous substances, including:

(A) Employee decontamination;

(B) Clothing decontamination; and

(C) Equipment decontamination.

(vii) Elements of the site emergency response plan, including:

- (A) Preemergency planning.
- (B) Personnel roles and lines of authority and communication.
- (C) Emergency recognition and prevention.
- (D) Safe distances and places of refuge.
- (E) Site security and control.
- (F) Evacuation routes and procedures.
- (G) Decontamination procedures not covered by the site safety and health plan.
- (H) Emergency medical treatment and first aid.
- (I) Emergency equipment and procedures for handling emergency incidents.

(e) The employer should provide hazardous waste employees with information and training on personal protective equipment used at the site, such as the following:

- (i) PPE to be used based upon known or anticipated site hazards.
- (ii) PPE limitations of materials and construction; limitations during temperature extremes, heat stress, and other appropriate medical considerations; use and limitations of respirator equipment as well as documentation procedures as outlined in chapter 296-62 WAC, Part E, Respiratory Protection.
- (iii) PPE inspection procedures prior to, during, and after use.
- (iv) PPE donning and doffing procedures.
- (v) PPE decontamination and disposal procedures.
- (vi) PPE maintenance and storage.
- (vii) Task duration as related to PPE limitations.

(f) The employer should instruct the employee about the site medical surveillance program relative to the particular site, including:

- (i) Specific medical surveillance programs that have been adapted for the site.
- (ii) Specific signs and symptoms related to exposure to hazardous materials on the site.
- (iii) The frequency and extent of periodic medical examinations that will be used on the site.
- (iv) Maintenance and availability of records.
- (v) Personnel to be contacted and procedures to be followed when signs and symptoms of exposures are recognized.

(g) The employees will review and discuss the site safety and health plan as part of the training program. The location of the site safety and health plan and all written programs should be discussed with employees including a discussion of the mechanisms for access, review, and references described.

(2) RCRA operations training for treatment, storage and disposal facilities.

(a) As a minimum, the training course required in WAC 296-62-31435 through 296-62-31440 and 296-62-31465 should include the following topics:

- (i) Review of the applicable parts of this Part P and the elements of the employer's occupational safety and health plan.
- (ii) Review of relevant hazards such as, but not limited to, chemical, biological, and radiological exposures; fire and explosion hazards; thermal extremes; and physical hazards.

(iii) General safety hazards including those associated with electrical hazards, powered equipment hazards, lockout/tagout procedures, motor vehicle hazards and walking-working surface hazards.

(iv) Confined space hazards and procedures.

(v) Work practices to minimize employee risk from workplace hazards.

(vi) Emergency response plan and procedures including first aid meeting the requirements of WAC 296-62-31450.

(vii) A review of procedures to minimize exposure to hazardous waste and various type of waste streams, including the materials handling program and spill containment program.

(viii) A review of hazard communication programs meeting the requirements of chapter 296-62 WAC, Part C.

(ix) A review of medical surveillance programs meeting the requirements of WAC 296-62-3050 and 296-62-31415 including the recognition of signs and symptoms of overexposure to hazardous substance including known synergistic interactions.

(x) A review of decontamination programs and procedures meeting the requirements of WAC 296-62-3100 and 296-62-31420.

(xi) A review of an employer's requirements to implement a training program and its elements.

(xii) A review of the criteria and programs for proper selection and use of personal protective equipment, including respirators.

(xiii) A review of the applicable appendices to this Part P (Appendices A through E).

(xiv) Principles of toxicology and biological monitoring as they pertain to occupational health.

(xv) Rights and responsibilities of employees and employers under applicable WISHA/OSHA and DOE/EPA regulations and laws.

(xvi) Hands-on exercises and demonstrations of competency with equipment to illustrate the basic equipment principles that may be used during the performance of work duties, including the donning and doffing of PPE.

(xvii) Sources of reference, efficient use of relevant manuals, and knowledge of hazard coding systems to include information contained in hazardous waste manifests.

(xviii) At least eight hours of hands-on training.

(xix) Training in the job skills required for an employee's job function and responsibility before they are permitted to participate in or supervise field activities.

(b) The individual employer should provide hazardous waste employees with information and training prior to an employee's initial assignment into a work area. The training and information should cover the following topics:

(i) The emergency response plan and procedures including first aid.

(ii) A review of the employer's hazardous waste handling procedures including the materials handling program and elements of the spill containment program, location of spill response kits or equipment, and the names of those trained to respond to releases.

(iii) The hazardous communication program meeting the requirements of chapter 296-62 WAC, Part C.

(iv) A review of the employer's medical surveillance program including the recognition of signs and symptoms of exposure to relevant hazardous substance including known synergistic interactions.

(v) A review of the employer's decontamination program and procedures.

(vi) A review of the employer's training program and the parties responsible for that program.

(vii) A review of the employer's personal protective equipment program including the proper selection and use of PPE based upon specific site hazards.

(viii) All relevant site-specific procedures addressing potential safety and health hazards. This may include, as appropriate, biological and radiological exposures, fire and explosion hazards, thermal hazards, and physical hazards such as electrical hazards, powered equipment hazards, lockout/tagout hazards, motor vehicle hazards, and walking-working surface hazards.

(ix) Safe use of engineering controls and equipment on-site.

(x) Names of personnel and alternates responsible for safety and health.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3195, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-62-3195, filed 1/18/95, effective 3/10/95.]

WAC 296-62-410 Emergency response to hazardous substance release.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-410, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41001 Scope and application. (1) Scope. This section covers employers who have employees who work in emergency response operations for the releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.

(2) Application. All requirements of this chapter and chapters 296-24 and 296-155 WAC apply under their terms to emergency response operations whether covered by this part or not. If there is a conflict or overlap, the provision more protective of employee safety and health must apply.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41001, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41003 Definitions. "Buddy system" means a system of organizing employees into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

"Clean-up operation" means an operation where hazardous substances are removed, contained, incinerated, neutralized, stabilized, cleared-up, or in any other manner processed or handled with the ultimate goal of making the site safer for people or the environment.

"Decontamination" means the removal of hazardous substances from employees and their equipment to the extent necessary to preclude the occurrence of foreseeable adverse health effects.

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"Emergency response" or "responding to emergencies" means a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area or by maintenance personnel are not considered to be emergency responses within the scope of this standard. Responses to release of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered to be emergency responses.

"Facility" means:

Any building structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly-owned treatment works), well, pit, pond, lagoon, impoundment, ditch, storage container, motor vehicle, rolling stock, or aircraft; or

Any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any water-borne vessel.

"Hazardous materials response (HAZMAT) team" means an organized group of employees, designated by the employer, who are expected to perform work, to handle and control actual or potential leaks or spills of hazardous substances requiring possible close approach to the substance. The team members perform responses to releases or potential releases of hazardous substances for the purpose of control or stabilization of the incident. A HAZMAT team is not a fire brigade nor is a typical fire brigade a HAZMAT team. A HAZMAT team, however, may be a separate component of a fire brigade or fire department.

"Hazardous substance" means any substance designated or listed under this definition, exposure to which results or may result in adverse effects on the health or safety of employees:

Any substance defined under section 101(14) of CERCLA;

Any biological agent and other disease-causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring;

Any substance listed by the United States Department of Transportation as hazardous materials under WAC 480-12-195; and

Hazardous waste.

"Hazardous waste" means: A waste or combination of wastes as defined in this section.

"Hazardous waste operation" means any operation conducted within the scope of chapter 296-62 WAC, Part P.

"Health hazard" means a chemical, mixture of chemicals, or a pathogen for which there is statistically significant

evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. It also includes stress due to temperature extremes. Further definition of the terms used above can be found in Appendix A to chapter 296-62 WAC, Part C.

"IDLH" or "immediately dangerous to life or health" means any atmospheric concentration of any toxic, corrosive, or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

"Oxygen deficiency" means that concentration of oxygen by volume below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen by volume is less than 19.5 percent oxygen.

"Permissible exposure limit" means the exposure, inhalation, or dermal permissible limit specified in WAC 296-62-075 through 296-62-07515.

"Published exposure level" means the exposure limits published in *"NIOSH Recommendations for Occupational Health Standards"* dated 1986 incorporated by reference, or if none is specified, the exposure limits published in the standards specified by the American Conference of Governmental Industrial Hygienists in their publication *"Threshold Limit Values and Biological Exposure Indices for 1988-89"* dated 1988 incorporated by reference.

"Post emergency response" means that portion of an emergency response performed after the immediate threat of a release has been stabilized or eliminated and clean-up of the site has begun. If post emergency response is performed by an employer's own employees who were part of the initial emergency response, it is considered to be part of the initial response and not post emergency response. However, if a group of an employer's own employees, separate from the group providing initial response, performs the clean-up operation, then the separate group of employees would be considered to be performing post-emergency response and subject to WAC 296-62-41060.

"Qualified person" means a person with specific training, knowledge, and experience in the area for which the person has responsibility and the authority to control.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41003, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41010 Emergency response. This section covers employers whose employees are engaged in emergency response no matter where it occurs except that it does not cover employees engaged in operations specified in WAC 296-62-300 (1)(a) through (d).

Those emergency response organizations who have developed and implemented programs equivalent to this section for handling releases of hazardous substances under Sec-

tion 303 of SARA Title III must be deemed to have met the requirements of this section.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41010, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41011 Emergency response plan. An emergency response plan must be developed and implemented to handle anticipated emergencies before the commencement of emergency response operations. The plan must be in writing and available for inspection and copying by employees, their representatives, and WISHA personnel. Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this section if they provide an emergency action plan in accordance with WAC 296-24-567(1).

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41011, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41013 Elements of an emergency response plan. The employer must develop an emergency response plan for emergencies which must address, as a minimum, the following to the extent that they are not addressed elsewhere:

- (1) Preemergency planning and coordination with outside parties.
- (2) Personnel roles, lines of authority, training, and communication.
- (3) Emergency recognition and prevention.
- (4) Safe distances and places of refuge.
- (5) Site security and control.
- (6) Evacuation routes and procedures.
- (7) Decontamination.
- (8) Emergency medical treatment and first aid.
- (9) Emergency alerting and response procedures.
- (10) Critique of response and follow-up.
- (11) PPE and emergency equipment.
- (12) Emergency response organizations may use the

local emergency response plan or the state emergency response plan or both, as part of their emergency response plan to avoid duplication. Those items of the emergency response plan that are being properly addressed by the SARA Title III plans may be substituted into their emergency plan or otherwise kept together for the employer and employee's use.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41013, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41015 Procedures for handling emergency response. (1) The senior emergency response official responding to an emergency must become the individual in charge of a site-specific incident command system (ICS). All emergency responders and their communications must be coordinated and controlled through the individual in charge of the ICS assisted by the senior official present for each employer.

Note: The "senior official" at an emergency response is the most senior official on the site who has the responsibility for controlling the operations at the site. Initially it is the senior officer on the first-due piece of responding emergency

apparatus to arrive on the incident scene. As more senior officers arrive (i.e., battalion chief, fire chief, state law enforcement official, site coordinator, etc.), the position is passed up the line of authority which has been previously established.

(2) The individual in charge of the ICS must identify, to the extent possible, all hazardous substances or conditions present and shall address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies.

(3) Based on the hazardous substances and/or conditions present, the individual in charge of the ICS must implement appropriate emergency operations, and assure that the personal protective equipment worn is appropriate for the hazards to be encountered. However, personal protective equipment must meet, at a minimum, the criteria contained in WAC 296-24-58513 when worn while performing fire fighting operations beyond the incipient stage for any incident.

(4) Employees engaged in emergency response and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard must wear positive pressure self-contained breathing apparatus, until the individual in charge of the ICS determines through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees.

(5) The individual in charge of the ICS must limit the number of emergency response personnel at the emergency site, in those areas of potential or actual exposure to incident or site hazards, to those who are actively performing emergency operations. However, operations in hazardous areas must be performed using the buddy system in groups of two or more.

(6) Back-up personnel must stand by with equipment ready to provide assistance or rescue. Advance first-aid support personnel, as a minimum, must also stand by with medical equipment and transportation capability.

(7) The individual in charge of the ICS must designate a safety official, who is knowledgeable in the operations being implemented at the emergency response site, with specific responsibility to identify and evaluate hazards and to provide direction with respect to the safety of operations for the emergency at hand.

(8) When activities are judged by the safety official to be an IDLH condition and/or to involve an imminent danger condition, the safety official must have the authority to alter, suspend, or terminate those activities. The safety official must immediately inform the individual in charge of the ICS of any actions needed to be taken to correct these hazards at the emergency scene.

(9) After emergency operations have terminated, the individual in charge of the ICS must implement appropriate decontamination procedures.

(10) When deemed necessary for meeting the tasks at hand, approved self-contained compressed air breathing apparatus may be used with approved cylinders from other approved self-contained compressed air breathing apparatus provided that such cylinders are of the same capacity and pressure rating. All compressed air cylinders used with self-contained breathing apparatus must meet United States

Department of Transportation and National Institute for Occupational Safety and Health criteria.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41015, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41017 Skilled support personnel. Personnel, not necessarily an employer's own employees, who are skilled in the operation of certain equipment, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an employer's own employees, and who will be or may be exposed to the hazards at an emergency response scene, are not required to meet the training required in this subsection for the employer's regular employees. However, these personnel must be given an initial briefing at the site before their participation in any emergency response. The initial briefing must include instruction in the wearing of appropriate personal protective equipment, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions provided to the employer's own employees must be used to assure the safety and health of these personnel.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41017, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41019 Specialist employees. Employees who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the individual in charge, must receive training or demonstrate competency in the area of their specialization annually.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41019, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41020 Training.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41020, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41021 Training before participation. Training must be based on the duties and functions to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this standard, must be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident.

Employees who participate, or are expected to participate, in emergency response, must be given training in accordance with the following:

(1) First responder awareness level. First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level must have sufficient

training or have had sufficient experience to objectively demonstrate competency in the following areas:

(a) An understanding of what hazardous substances are and the risks associated with them in an incident.

(b) An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.

(c) The ability to recognize the presence of hazardous substances in an emergency.

(d) The ability to identify the hazardous substances, if possible.

(e) An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the United States Department of Transportation's Emergency Response Guidebook.

(f) The ability to realize the need for additional resources and to make appropriate notifications to the communication center.

(2) First responder operations level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and protect exposures. First responders at the operational level must have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer must so certify:

(a) Knowledge of the basic hazard and risk assessment techniques.

(b) Know how to select and use proper personal protective equipment provided to the first responder operational level.

(c) An understanding of basic hazardous materials terms.

(d) Know how to perform basic control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.

(e) Know how to implement basic decontamination procedures.

(f) An understanding of the relevant standard operating procedures and termination procedures.

(3) Hazardous materials technician. Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch, or otherwise stop the release of hazardous substance. Hazardous materials technicians must have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer must so certify:

(a) Know how to implement the employer's emergency response plan.

(b) Know the classification, identification, and verification of known and unknown materials by using field survey instruments and equipment.

(c) Be able to function within an assigned role in the incident command system.

(d) Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.

(e) Understand hazard and risk assessment techniques.

(f) Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.

(g) Understand and implement decontamination procedures.

(h) Understand termination procedures.

(i) Understand basic chemical and toxicological terminology and behavior.

(4) Hazardous materials specialist. Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with federal, state, local, and other government authorities in regard to site activities.

Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas and the employer must so certify:

(a) Know how to implement the local emergency response plan.

(b) Understand classification, identification, and verification of known and unknown materials by using advanced survey instruments and equipment.

(c) Know of the state emergency response plan.

(d) Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.

(e) Understand in-depth hazard and risk techniques.

(f) Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.

(g) Be able to determine and implement decontamination procedures.

(h) Have the ability to develop a site safety and control plan.

(i) Understand chemical, radiological, and toxicological terminology and behavior.

(5) On scene incident commander. Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, must receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer must so certify:

(a) Know and be able to implement the employer's incident command system.

(b) Know how to implement the employer's emergency response plan.

(c) Know and understand the hazards and risks associated with employees working in chemical protective clothing.

(d) Know how to implement the local emergency response plan.

(e) Know of the state emergency response plan and of the Federal Regional Response Team.

(f) Know and understand the importance of decontamination procedures.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41021, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41023 Trainers. Trainers who teach any of the above training subjects must have satisfactorily completed a training course for teaching the subjects they are expected to teach, such as the courses offered by the United States National Fire Academy, or they must have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41023, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41025 Refresher training. (1) Those employees who are trained in accordance with WAC 296-62-41020 must receive annual refresher training of sufficient content and duration to maintain their competencies, or must demonstrate competency in those areas at least yearly.

(2) A statement must be made of the training or competency, and if a statement of competency is made, the employer must keep a record of the methodology used to demonstrate competency.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-094, § 296-62-41025, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41025, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41030 Employee personal protective equipment.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41030, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41031 Personal protective equipment selection. (1) Personal protective equipment (PPE) must be selected and used which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization and analysis.

(2) Personal protective equipment selection must be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

(3) Positive pressure self-contained breathing apparatus, or positive pressure air-line respirators equipped with an escape air supply must be used when chemical exposure levels present will create a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.

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(4) Totally encapsulating chemical protective suits (protection equivalent to Level A protection as recommended in Appendix B) must be used in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.

(5) The level of protection provided by PPE selection must be increased when additional information or site conditions indicate that increased protection is necessary to reduce employee exposures below permissible exposure limits and published exposure levels for hazardous substances and health hazards. (See WAC 296-62-41082 - Appendix B for guidance on selecting PPE ensembles.)

Note: The level of employee protection provided may be decreased when additional information or site conditions show that decreased protection will not result in increased hazardous exposures to employees.

(6) Personal protective equipment must be selected and used to meet the requirements of chapter 296-24 WAC, Part A-2, and additional requirements specified in this part.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41031, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41033 Totally encapsulating chemical protective suits. (1) Totally encapsulating suits must protect employees from the particular hazards which are identified during site characterization and analysis.

(2) Totally encapsulating suits must be capable of maintaining positive air pressure. (See WAC 296-62-41081 - Appendix A for a test method which may be used to evaluate this requirement.)

(3) Totally encapsulating suits must be capable of preventing inward test gas leakage of more than 0.5 percent. (See WAC 296-62-41081 - Appendix A for a test method which may be used to evaluate this requirement.)

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41033, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41035 Personal protective equipment (PPE) program. A written personal protective equipment program, which is part of the emergency response plan required in WAC 296-62-41011 must be established. The PPE program must address the elements listed below. When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the plan, they need not be rewritten into the plan as long as they adequately address the procedure or element.

- (1) PPE selection based on site hazards,
- (2) PPE use and limitations of the equipment,
- (3) Work mission duration,
- (4) PPE maintenance and storage,
- (5) PPE decontamination and disposal,
- (6) PPE training and proper fitting,
- (7) PPE donning and doffing procedures,
- (8) PPE inspection procedures before, during, and after use,
- (9) Evaluation of the effectiveness of the PPE program, and

(10) Limitations during temperature extremes, heat stress, and other appropriate medical considerations.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41035, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41040 Medical surveillance and consultation for emergency response.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41040, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41041 Employees covered. The medical surveillance program must be instituted by the employer for the following employees:

(1) All employees who are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits or, if there is no permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year;

(2) Members of an organized and designated HAZMAT team and hazardous materials specialists must receive a baseline physical examination and be provided with medical surveillance.

(3) Any emergency response employees who exhibit signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident, either immediately or subsequently, must be provided with medical consultation as required in WAC 296-62-41041(2).

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41041, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41042 Frequency of medical examinations and consultations. Medical examinations and consultations must be made available by the employer to each employee covered under subsection (1) of this section on the following schedules:

(1) For employees covered under WAC 296-62-41041 (1) and (2):

(a) Before assignment;

(b) At least once every twelve months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is appropriate;

(c) At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months;

(d) As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that the employee has been injured or exposed above the permissible exposure limits, or published exposure levels in an emergency situation;

(e) At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.

(2) For employees covered under WAC 296-62-41042 (1)(c) and for all employees including those employees covered by chapter 296-62 WAC, Part R who may have been

injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible exposure limits or the published exposure levels without the necessary personal protective equipment being used:

(a) As soon as possible following the emergency incident or development of signs or symptoms;

(b) At additional times, if the examining physician determines that follow-up examinations or consultations are medically necessary.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41042, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41043 Content of medical examinations and consultations. (1) Medical examinations required by WAC 296-62-41042 must include a medical and work history (or updated history if one is in the employee's file) with special emphasis on symptoms related to the handling of hazardous substances and health hazards, and to fitness for duty including the ability to wear any required PPE under conditions (i.e., temperature extremes) that may be expected at the worksite.

(2) The content of medical examinations or consultations made available to employees under this section shall be determined by the examining physician. The guidelines in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (see Appendix D, Reference #10) should be consulted.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41043, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41044 Examination by a physician and costs. All medical examinations and procedures must be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine, and must be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41044, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41045 Information provided to the physician. The employer must provide one copy of this standard and its appendices to the examining physician, and in addition, the following for each employee:

(1) A description of the employee's duties as they relate to the employee's exposures;

(2) The employee's exposure levels or anticipated exposure levels;

(3) A description of any personal protective equipment used or to be used;

(4) Information from previous medical examinations of the employee which is not readily available to the examining physician; and

(5) Information required in WAC 296-62-071 through 296-62-07121.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41045, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41046 Physician's written opinion. (1) The employer must obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:

(a) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response or from respirators use.

(b) The physician's recommended limitations upon the employees assigned work.

(c) The results of the medical examination and tests if requested by the employee.

(d) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(2) The written opinion obtained by the employer must not reveal specific findings or diagnoses unrelated to occupational exposures.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41046, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41047 Recordkeeping of medical surveillance activities. (1) An accurate record of the medical surveillance required by this section must be retained. This record must be retained for the period specified and meet the criteria of chapter 296-62 WAC, Part B.

(2) The record required in (a) of this subsection must include at least the following information:

(a) The name and Social Security number of the employee;

(b) Physicians' written opinions, recommended limitations, and results of examinations and tests;

(c) Any employee medical complaints related to exposure to hazardous substances;

(d) A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41047, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41060 Post emergency response operations.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41060, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41061 Removal of hazardous substances. Upon completion of the emergency response, if it is determined that it is necessary to remove hazardous substances, health hazards, and materials contaminated with them (such as contaminated soil or other elements of the natural environment) from the site of the incident, the employer conducting the clean-up must comply with chapter 296-62 WAC, Part P.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41061, filed 3/23/99, effective 6/23/99.]

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WAC 296-62-41063 Employees training and protective equipment. Where the clean-up is done on plant property using plant or workplace employees, such employees must have completed the training requirements of WAC 296-24-567(1), 296-62-071, and 296-62-054, and other appropriate safety and health training made necessary by the tasks that they are expected to be performed such as personal protective equipment and decontamination procedures. All equipment to be used in the performance of the clean-up work must be in serviceable condition and must have been inspected before use.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41063, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41080 Appendices to Part R—Emergency response.

Note: The following appendices serve as nonmandatory guidelines to assist employees and employers in complying with the appropriate requirements of this part. However, WAC 296-62-41030 makes mandatory in certain circumstances the use of Level A and Level B personal protective equipment protection.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41080, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41081 Appendix A—Personal protective equipment test methods. This appendix sets forth the nonmandatory examples of tests which may be used to evaluate compliance with WAC 296-62-41030. Other tests and other challenge agents may be used to evaluate compliance.

(1) Totally encapsulating chemical protective suit pressure test.

(a) Scope.

(i) This practice measures the ability of a gas tight totally encapsulating chemical protective suit material, seams, and closures to maintain a fixed positive pressure. The results of this practice allow the gas tight integrity of a total-encapsulating chemical protective suit to be evaluated.

(ii) Resistance of the suit materials to permeation, penetration, and degradation by specific hazardous substances is not determined by this test method.

(b) Definition of terms.

(i) "Totally encapsulated chemical protective suit (TECP suit)" means a full body garment which is constructed of protective clothing materials; covers the wearer's torso, head, arms, and legs; may cover the wearer's hands and feet with tightly attached gloves and boots; completely encloses the wearer and respirator by itself or in combination with the wearer's gloves and boots.

(ii) "Protective clothing material" means any material or combination of materials used in an item of clothing for the purpose of isolating parts of the body from direct contact with a potentially hazardous liquid or gaseous chemicals.

(iii) "Gas tight" means for the purpose of this test method the limited flow of a gas under pressure from the inside of a TECP suit to atmosphere at a prescribed pressure and time interval.

(c) Summary of test method. The TECP suit is visually inspected and modified for the test. The test apparatus is attached to the suit to permit inflation to the pretest suit

expansion pressure for removal of suit wrinkles and creases. The pressure is lowered to the test pressure and monitored for three minutes. If the pressure drop is excessive, the TECP suit fails the test and is removed from service. The test is repeated after leak location and repair.

(d) Required supplies.

(i) Source of compressed air.

(ii) Test apparatus for suit testing including a pressure measurement device with a sensitivity of at least 1/4 inch water gauge.

(iii) Vent valve closure plugs or sealing tape.

(iv) Soapy water solution and soft brush.

(v) Stopwatch or appropriate timing device.

(e) Safety precautions. Care must be taken to provide the correct pressure safety devices required for the source of compressed air used.

(f) Test procedure. Before each test, the tester shall perform a visual inspection of the suit. Check the suit for seam integrity by visually examining the seams and gently pulling on the seams. Ensure that all air supply lines, fittings, visor, zippers, and valves are secure and show no signs of deterioration.

(i) Seal off the vent valves along with any other normal inlet or exhaust points (such as umbilical air line fittings or facepiece opening) with tape or other appropriate means (caps, plugs, fixture, etc.). Care should be exercised in the sealing process not to damage any of the suit components.

(ii) Close all closure assemblies.

(iii) Prepare the suit for inflation by providing an improvised connection point on the suit for connecting an airline. Attach the pressure test apparatus to the suit to permit suit inflation from a compressed air source equipped with a pressure indicating regulator. The leak tightness of the pressure test apparatus should be tested before and after each test by closing off the end of the tubing attached to the suit and assuring a pressure of three inches water gauge for three minutes can be maintained. If a component is removed for the test, that component must be replaced and a second test conducted with another component removed to permit a complete test of the ensemble.

(iv) The pretest expansion pressure (A) and the suit test pressure (B) must be supplied by the suit manufacturer, but in no case must they be less than (A)= 3 inches water gauge and (B)=2 inches water gauge. The ending suit pressure (C) must be no less than eighty percent of the test pressure (B); i.e., the pressure drop must not exceed twenty percent of the test pressure (B).

(v) Inflate the suit until the pressure inside is equal to pressure (A), the pretest expansion suit pressure. Allow at least one minute to fill out the wrinkles in the suit. Release sufficient air to reduce the suit pressure to pressure (B), the suit test pressure. Begin timing. At the end of three minutes, record the suit pressure as pressure (C), the ending suit pressure. The difference between the suit test pressure and the ending suit test pressure (B)-(C) must be defined as the suit pressure drop.

(vi) If the suit pressure drop is more than twenty percent of the suit test pressure (B) during the three minute test period, the suit fails the test and must be removed from service.

(g) Retest procedure.

(i) If the suit fails the test check for leaks by inflating the suit to pressure (A) and brushing or wiping the entire suit (including seams, closures, lens gaskets, glove-to-sleeve joints, etc.) with a mild soap and water solution. Observe the suit for the formation of soap bubbles, which is an indication of a leak. Repair all identified leaks.

(ii) Retest the TECP suit as outlined in (f) of this subsection.

(h) Report. Each TECP suit tested by this practice must have the following information recorded.

(i) Unique identification number, identifying brand name, date of purchase, material of construction, and unique fit features; e.g., special breathing apparatus.

(ii) The actual values for test pressures (A), (B), and (C) must be recorded along with the specific observation times. If the ending pressure (C) is less than eighty percent of the test pressure (B), the suit shall be identified as failing the test. When possible, the specific leak location shall be identified in the test records. Retest pressure data must be recorded as an additional test.

(iii) The source of the test apparatus used must be identified and the sensitivity of the pressure gauge must be recorded.

(iv) Records must be kept for each pressure test even if repairs are being made at the test location.

Caution: Visually inspect all parts of the suit to be sure they are positioned correctly and secured tightly before putting the suit back into service. Special care should be taken to examine each exhaust valve to make sure it is not blocked. Care should also be exercised to assure that the inside and outside of the suit is completely dry before it is put into storage.

(2) Totally encapsulating chemical protective suit qualitative leak test.

(a) Scope.

(i) This practice semiquantitatively tests gas tight totally encapsulating chemical protective suit integrity by detecting inward leakage of ammonia vapor. Since no modifications are made to the suit to carry out this test, the results from this practice provide a realistic test for the integrity of the entire suit.

(ii) Resistance of the suit materials to permeation, penetration, and degradation is not determined by this test method. ASTM test methods are available to test suit materials for those characteristics and the tests are usually conducted by the manufacturers of the suits.

(b) Definition of terms.

(i) "Totally encapsulated chemical protective suit (TECP suit)" means a full body garment which is constructed of protective clothing materials; covers the wearer's torso, head, arms, and legs; may cover the wearer's hands and feet with tightly attached gloves and boots; completely encloses the wearer and respirator by itself or in combination with the wearer's gloves and boots.

(ii) "Protective clothing material" means any material or combination of materials used in an item of clothing for the purpose of isolating parts of the body from direct contact with a potentially hazardous liquid or gaseous chemicals.

(iii) "Gas tight" means for the purpose of this test method the limited flow of a gas under pressure from the inside of a TECP suit to atmosphere at a prescribed pressure and time interval.

(iv) "Intrusion coefficient." A number expressing the level of protection provided by a gas tight totally encapsulating chemical protective suit. The intrusion coefficient is calculated by dividing the test room challenge agent concentration by the concentration of challenge agent found inside the suit. The accuracy of the intrusion coefficient is dependent on the challenge agent monitoring methods. The larger the intrusion coefficient, the greater the protection provided by the TECP suit.

(c) Summary of recommended practice. The volume of concentrated aqueous ammonia solution (ammonia hydroxide, NH₄OH) required to generate the test atmosphere is determined using the directions outlined in WAC 296-62-41081 (2)(f)(i). The suit is donned by a person wearing the appropriate respiratory equipment (either a positive pressure self-contained breathing apparatus or a supplied air respirator) and worn inside the enclosed test room. The concentrated aqueous ammonia solution is taken by the suited individual into the test room and poured into an open plastic pan. A two-minute evaporation period is observed before the test room concentration is measured using a high range ammonia length of stain detector tube. When the ammonia reaches a concentration of between 1000 and 1200 ppm, the suited individual starts a standardized exercise protocol to stress and flex the suit. After this protocol is completed the test room concentration is measured again. The suited individual exits the test room and his stand-by person measures the ammonia concentration inside the suit using a low range ammonia length of stain detector tube or other more sensitive ammonia detector. A stand-by person is required to observe the test individual during the test procedure, aid the person in donning and doffing the TECP suit and monitor the suit interior. The intrusion coefficient of the suit can be calculated by dividing the average test area concentration by the interior suit concentration. A colorimetric indicator strip of bromophenol blue is placed on the inside of the suit facepiece lens so that the suited individual is able to detect a color change and know if the suit has a significant leak. If a color change is observed the individual should leave the test room immediately.

(d) Required supplies.

(i) A supply of concentrated aqueous ammonium hydroxide, 58% by weight.

(ii) A supply of bromophenol/blue indicating paper, sensitive to 5-10 ppm ammonia or greater over a two-minute period of exposure [pH 3.0 (yellow) to pH 4.6 (blue)].

(iii) A supply of high range (0.5-10 volume percent) and low range (5-700 ppm) detector tubes for ammonia and the corresponding sampling pump. More sensitive ammonia detectors can be substituted for the low range detector tubes to improve the sensitivity of this practice.

(iv) A shallow plastic pan (PVC) at least 12":14":1" and a half pint plastic container (PVC) with tightly closing lid.

(v) A graduated cylinder or other volumetric measuring device of at least fifty milliliters in volume with an accuracy of at least ± 1 milliliters.

(e) Safety precautions.

(i) Concentrated aqueous ammonium hydroxide, NH₄OH is a corrosive volatile liquid requiring eye, skin, and respiratory protection. The person conducting the test must review the MSDS for aqueous ammonia.

(ii) Since the established permissible exposure limit for ammonia is 35 ppm as a 15 minute STEL, only persons wearing a positive pressure self-contained breathing apparatus or a supplied air respirator shall be in the chamber. Normally only the person wearing the total-encapsulating suit will be inside the chamber. A stand-by person shall have a self-contained breathing apparatus, or a positive pressure supplied air respirator available to enter the test area should the suited individual need assistance.

(iii) A method to monitor the suited individual must be used during this test. Visual contact is the simplest but other methods using communication devices are acceptable.

(iv) The test room must be large enough to allow the exercise protocol to be carried out and then to be ventilated to allow for easy exhaust of the ammonia test atmosphere after the test(s) are completed.

(v) Individuals must be medically screened for the use of respiratory protection and checked for allergies to ammonia before participating in this test procedure.

(f) Test procedure.

(i) Measure the test area to the nearest foot and calculate its volume in cubic feet. Multiply the test area volume by 0.2 milliliters of concentrated aqueous ammonia per cubic foot of test area volume to determine the approximate volume of concentrated aqueous ammonia required to generate 1000 ppm in the test area.

(A) Measure this volume from the supply of concentrated ammonia and place it into a closed plastic container.

(B) Place the container, several high range ammonia detector tubes and the pump in the clean test pan and locate it near the test area entry door so that the suited individual has easy access to these supplies.

(ii) In a noncontaminated atmosphere, open a presealed ammonia indicator strip and fasten one end of the strip to the inside of the suit face shield lens where it can be seen by the wearer. Moisten the indicator strip with distilled water. Care must be taken not to contaminate the detector part of the indicator paper by touching it. A small piece of masking tape or equivalent should be used to attach the indicator strip to the interior of the suit face shield.

(iii) If problems are encountered with this method of attachment the indicator strip can be attached to the outside of the respirator facepiece being used during the test.

(iv) Don the respiratory protective device normally used with the suit, and then don the TECP suit to be tested. Check to be sure all openings which are intended to be sealed (zippers, gloves, etc.) are completely sealed. DO NOT, however, plug off any venting valves.

(v) Step into the enclosed test room such as a closet, bathroom, or test booth, equipped with an exhaust fan. No air should be exhausted from the chamber during the test because this will dilute the ammonia challenge concentrations.

(vi) Open the container with the premeasured volume of concentrated aqueous ammonia within the enclosed test

room, and pour the liquid into the empty plastic test pan. Wait two minutes to allow for adequate volatilization of the concentrated aqueous ammonia. A small mixing fan can be used near the evaporation pan to increase the evaporation rate of the ammonia solution.

(vii) After two minutes a determination of the ammonia concentration within the chamber should be made using the high range colorimetric detector tube. A concentration of 1000 ppm ammonia or greater must be generated before the exercises are started.

(viii) To test the integrity of the suit the following four minute exercise protocol should be followed:

(A) Raising the arms above the head with at least fifteen raising motions completed in one minute.

(B) Walking in place for one minute with at least fifteen raising motions of each leg in a one-minute period.

(C) Touching the toes with at least ten complete motions of the arms from above the head to touching of the toes in a one-minute period.

(D) Knee bends with at least ten complete standing and squatting motions in a one-minute period.

(ix) If at any time during the test the colorimetric indicating paper should change colors the test should be stopped and (f)(x) and (xi) of this subsection initiated.

(x) After completion of the test exercise, the test area concentration should be measured again using the high range colorimetric detector tube.

(xi) Exit the test area.

(xii) The opening created by the suit zipper or other appropriate suit penetration should be used to determine the ammonia concentration in the suit with the low range length of stain detector tube or other ammonia monitor. The internal TECP suit air should be sampled far enough from the enclosed test area to prevent a false ammonia reading.

(xiii) After completion of the measurement of the suit interior ammonia concentration the test is concluded and the suit is doffed and the respirator removed.

(xiv) The ventilating fan for the test room should be turned on and allowed to run for enough time to remove the ammonia gas. The fan must be vented to the outside of the building.

(xv) Any detectable ammonia in the suit interior (5 ppm ammonia (NH₃) or more for the length of stain detector tube) indicates the suit failed the test. When other ammonia detectors are used, a lower level of detection is possible and it should be specified as the pass/fail criteria.

(xvi) By following this test method an intrusion coefficient of approximately two hundred or more can be measured with the suit in a completely operational condition. If the intrusion coefficient is two hundred or more, then the suit is suitable for emergency response and field use.

(g) Retest procedures.

(i) If the suit fails this test, check for leaks by following the pressure test in test (A) above.

(ii) Retest the TECP suit as outlined in the test procedure in (f) of this subsection.

(h) Report.

(i) Each gas tight totally encapsulating chemical protective suit tested by this practice shall have the following information recorded.

(A) Unique identification number, identifying brand name, date of purchase, material of construction, and unique suit features; e.g., special breathing apparatus.

(B) General description of test room used for test.

(C) Brand name and purchase date of ammonia detector strips and color change data.

(D) Brand name, sampling range, and expiration date of the length of stain ammonia detector tubes. The brand name and model of the sampling pump should also be recorded. If another type of ammonia detector is used, it should be identified along with its minimum detection limit for ammonia.

(E) Actual test results must list the two test area concentrations, their average, the interior suit concentration, and the calculated intrusion coefficient. Retest data must be recorded as an additional test.

(ii) The evaluation of the data must be specified as "suit passed" or "suit failed" and the date of the test. Any detectable ammonia (5 ppm or greater for the length of stain detector tube) in the suit interior indicates the suit fails this test. When other ammonia detectors are used, a lower level of detection is possible and it should be specified as the pass/fail criteria.

Caution: Visually inspect all parts of the suit to be sure they are positioned correctly and secured tightly before putting the suit back into service. Special care should be taken to examine each exhaust valve to make sure it is not blocked.

Care should also be exercised to assure that the inside and outside of the suit is completely dry before it is put into storage.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41081, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41082 Appendix B—General description and discussion of the levels of protection and protective gear. (1) This appendix sets forth information about personal protective equipment (PPE) protection levels which may be used to assist employers in complying with the PPE requirements of this section.

(2) As required by the standard, PPE must be selected which will protect employees from the specific hazards which they are likely to encounter during their work on-site.

(3) Selection of the appropriate PPE is a complex process which must take into consideration a variety of factors. Key factors involved in this process are identification of the hazards or suspected hazards, their routes of potential hazard to employees (inhalation, skin absorption, ingestion, and eye or skin contact), and the performance of the PPE materials (and seams) in providing a barrier to these hazards. The amount of protection provided by PPE is material-hazard specific. That is, protective equipment materials will protect well against some hazardous substances and poorly, or not at all, against others. In many instances, protective equipment materials cannot be found which will provide continuous protection from the particular hazardous substance. In these cases the breakthrough time of the protective material should exceed the work durations.

(4) Other factors in this selection process to be considered are matching the PPE to the employee's work requirements and task-specific conditions. The durability of PPE materials, such as tear strength and seam strength, must be

considered in relation to the employee's tasks. The effects of PPE in relation to heat stress and task duration are a factor in selecting and using PPE. In some cases layers of PPE may be necessary to provide sufficient protection, or to protect expensive PPE inner garments, suits or equipment.

(5) The more that is known about the hazards at the site, the easier the job of PPE selection becomes. As more information about the hazards and conditions at the site becomes available, the site supervisor can make decisions to upgrade or downgrade the level of PPE protection to match the tasks at hand.

(6) The following are guidelines which an employer can use to begin the selection of the appropriate PPE. As noted above, the site information may suggest the use of combinations of PPE selected from the different protection levels (i.e., A, B, C, or D) as being more suitable to the hazards of the work. It should be cautioned that the listing below does not fully address the performance of the specific PPE material in relation to the specific hazards at the job site, and that PPE selection, evaluation and reselection is an ongoing process until sufficient information about the hazards and PPE performance is obtained.

(7) Personal protective equipment has been divided into four categories based on the degree of protection afforded (see subsection (8) of this section for further explanation of Levels A, B, C, and D hazards):

(a) Level A. To be selected when the greatest level of skin, respiratory, and eye protection is required. The following constitute Level A equipment; it may be used as appropriate:

(i) Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied-air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH).

(ii) Totally encapsulating chemical-protective suit.

(iii) Coveralls.*

(iv) Long underwear.*

(v) Gloves, outer, chemical-resistant.

(vi) Gloves, inner, chemical-resistant.

(vii) Boots, chemical-resistant steel toe and shank.

(viii) Hard hat (under suit).*

(ix) Disposable protective suit, gloves, and boots. (Depending on suit construction, may be worn over totally encapsulating suit.)

*Optional, as applicable.

(b) Level B. The highest level of respiratory protection is necessary but a lesser level of skin protection is needed. The following constitute Level B equipment; it may be used as appropriate:

(i) Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied-air respirator with escape SCBA (NIOSH approved).

(ii) Hooded chemical-resistant clothing (overalls and long-sleeved jacket, coveralls, one or two-piece chemical-splash suit, disposable chemical-resistant overalls).

(iii) Coveralls.*

(iv) Gloves, outer, chemical-resistant.

(v) Gloves, inner, chemical-resistant.

(vi) Boots, outer, chemical-resistant steel toe and shank.

(vii) Boot-covers, outer, chemical-resistant (disposable).*

(viii) Hard hat.

(ix) Face shield.*

*Optional, as applicable.

(c) Level C. The concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met. The following constitute Level C equipment; it may be used as appropriate.

(i) Full-face or half-mask, air purifying respirators (NIOSH approved).

(ii) Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).

(iii) Coveralls.*

(iv) Gloves, outer, chemical-resistant.

(v) Gloves, inner, chemical-resistant.

(vi) Boots (outer), chemical-resistant steel toe and shank.*

(vii) Boot-covers, outer, chemical-resistant (disposable).*

(viii) Hard hat.

(ix) Escape mask.*

(x) Face shield.*

*Optional, as applicable.

(d) Level D. A work uniform affording minimal protection: Used for nuisance contamination only. The following constitute Level D equipment; it may be used as appropriate.

(i) Coveralls.

(ii) Gloves.*

(iii) Boots/shoes, chemical-resistant steel toe and shank.

(iv) Boots, outer, chemical-resistant (disposable).*

(v) Safety glasses or chemical splash goggles.*

(vi) Hard hat.

(vii) Escape mask.*

(viii) Face shield.*

*Optional, as applicable.

(8) Part B. The types of hazards for which Levels A, B, C, and D protection are appropriate are described below:

(a) Level A - Level A protection should be used when:

(i) The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured (or potential for) high concentration of atmospheric vapors, gases, or particulates; or the site operations and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the intact skin;

(ii) Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible; or

(iii) Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A have not yet been determined.

(b) Level B protection should be used when:

(i) The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection;

(ii) The atmosphere contains less than 19.5 percent oxygen; or

(iii) The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.

Note: This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators.

(c) Level C protection should be used when:

(i) The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin;

(ii) The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and

(iii) All criteria for the use of air-purifying respirators are met.

(d) Level D protection should be used when:

(i) The atmosphere contains no known hazard; and

(ii) Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Note: As stated before combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

(9) As an aid in selecting suitable chemical protective clothing, it should be noted that the National Fire Protection Association (NFPA) has developed standards on chemical protective clothing. The standards that have been adopted include:

(a) NFPA 1991 - Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies (EPA Level A Protective Clothing);

(b) NFPA 1992 - Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies (EPA Level B Protective Clothing);

(c) NFPA 1993 - Standard on Liquid Splash-Protective Suits for Nonemergency, Nonflammable Hazardous Chemical Situations (EPA Level B Protective Clothing).

(10) These standards apply documentation and performance requirements to the manufacture of chemical protective suits. Chemical protective suits meeting these requirements are labelled as compliant with the appropriate standard. It is recommended that chemical protective suits that meet these standards be used.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41082, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41084 Appendix C—Compliance guidelines. (1) For hazardous materials specialists (usually members of hazardous materials teams), the training will need to address the care, use and/or testing of chemical protective clothing including totally encapsulating suits, the medical surveillance program, the standard operating procedures for the hazardous materials team including the use of plugging and patching equipment and other subject areas.

(2) Officers and leaders who may be expected to be in charge at an incident will need to be fully knowledgeable of their company's incident command system. They will need to know where and how to obtain additional assistance and be familiar with the local district's emergency response plan and the state emergency response plan.

(3) Specialist employees such as technical experts, medical experts, or environmental experts that work with hazardous materials in their regular jobs, who may be sent to the incident scene by the shipper, manufacturer or governmental agency to advise and assist the person in charge of the incident will have training on an annual basis. Their training must include the care and use of personal protective equipment including respirators; knowledge of the incident command system and how they are to relate to it; and those areas needed to keep them current in their respective field as it relates to safety and health involving specific hazardous substances.

(4) Those skilled support personnel, such as employees who work for public works departments or equipment operators who operate bulldozers, sand trucks, backhoes, etc., who may be called to the incident scene to provide emergency support assistance, will need to have at least a safety and health briefing before entering the area of potential or actual exposure. These specially skilled support personnel, who have not been a part of the emergency plan and do not meet the training requirements, must be made aware of the hazards they face and be provided all necessary protective clothing and equipment required for their tasks.

(5) There are two National Fire Protection Association standards, NFPA 472—"Standard for Professional Competence of Responders to Hazardous Material Incidents" and NFPA 471—"Recommended Practice for Responding to Hazardous Material Incidents," which are excellent resource documents to aid fire departments and other emergency response organizations in developing their training program materials. NFPA 472 provides guidance on the skills and knowledge needed for first responder awareness level, first responder operations level, HAZMAT technicians, and HAZMAT specialist. It also offers guidance for the officer corp who will be in charge of hazardous substance incidents.

(6) Decontamination. Decontamination procedures will be tailored to the specific hazards of the site and will vary in complexity, and number of steps, depending on the level of hazard and the employee's exposure to the hazard. Decontamination procedures and PPE decontamination methods will vary depending upon the specific substance, since one procedure or method will not work for all substances. Evaluation of decontamination methods and procedures should be performed, as necessary, to assure that employees are not exposed to hazards by reusing PPE. References in WAC 296-62-41085, Appendix D, may be used for guidance in establishing an effective decontamination program. In addition, the United States Coast Guard Manual, "Policy Guidance for Response to Hazardous Chemical Releases," United States Department of Transportation, Washington, D.C. (COMDTINST M16465.30), is a good reference for establishing an effective decontamination program.

(7) Emergency response plans. States, along with designated districts within the states, will be developing or have

developed emergency response plans. These state and district plans are to be used in the emergency response plans called for in this standard. Each employer needs to assure that its emergency response plan is compatible with the local plan. The major reference being used to aid in developing the state and local district plans is the Hazardous Materials Emergency Planning Guide, NRT-1. The current Emergency Response Guidebook from the United States Department of Transportation, CMA's CHEMTREC and the Fire Service Emergency Management Handbook may also be used as resources.

(8) Personal protective equipment programs. The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biologic hazards that may be encountered at a hazardous substance site.

(a) As discussed in Appendix B, no single combination of protective equipment and clothing is capable of protecting against all hazards. Thus PPE should be used in conjunction with other protective methods and its effectiveness evaluated periodically.

(b) The use of PPE can itself create significant worker hazards, such as heat stress, physical and psychological stress, and impaired vision, mobility, and communication. For any given situation, equipment and clothing will be selected that provide an adequate level of protection. However, over protection, as well as under protection, can be hazardous and should be avoided where possible.

(c) Two basic objectives of any PPE program will be to protect the wearer from safety and health hazards, and to prevent injury to the wearer from incorrect use and/or malfunction of the PPE. To accomplish these goals, a comprehensive PPE program will include hazard identification, medical monitoring, environmental surveillance, selection, use, maintenance, and decontamination of PPE and its associated training.

(d) The written PPE program will include policy statements, procedures, and guidelines. Copies will be made available to all employees and a reference copy will be made available at the worksite. Technical data on equipment, maintenance manuals, relevant regulations, and other essential information will also be collected and maintained.

(9) Incident command system (ICS). WAC 296-62-40115(2) requires the implementation of an ICS. The ICS is an organized approach to effectively control and manage operations at an emergency incident. The individual in charge of the ICS is the senior official responding to the incident. The ICS is not much different than the "command post" approach used for many years by the fire service. During large complex fires involving several companies and many pieces of apparatus, a command post would be established. This enables one individual to be in charge of managing the incident, rather than having several officers from different companies making separate, and sometimes conflicting, decisions. The individual in charge of the command post would delegate responsibility for performing various tasks to subordinate officers. Additionally, all communications were routed through the command post to reduce the number of radio transmissions and eliminate confusion. However, strategy, tactics, and all decisions were made by one individual.

(a) The ICS is a very similar system, except it is implemented for emergency response to all incidents, both large and small, that involve hazardous substances.

(b) For a small incident, the individual in charge of the ICS may perform many tasks of the ICS. There may not be any, or little, delegation of tasks to subordinates. For example, in response to a small incident, the individual in charge of the ICS, in addition to normal command activities, may become the safety officer and may designate only one employee (with proper equipment) as a back-up to provide assistance if needed. WISHA does recommend, however, that at least two employees be designated as back-up personnel since the assistance needed may include rescue.

(c) To illustrate the operation of the ICS, the following scenario might develop during a small incident, such as an overturned tank truck with a small leak of flammable liquid.

(d) The first responding senior officer would implement and take command of the ICS. That person would size-up the incident and determine if additional personnel and apparatus were necessary; would determine what actions to take to control the leak; and, determine the proper level of personal protective equipment. If additional assistance is not needed, the individual in charge of the ICS would implement actions to stop and control the leak using the fewest number of personnel that can effectively accomplish the tasks. The individual in charge of the ICS then would designate him or herself as the safety officer and two other employees as a back-up in case rescue may become necessary. In this scenario, decontamination procedures would not be necessary.

(e) A large complex incident may require many employees and difficult, time-consuming efforts to control. In these situations, the individual in charge of the ICS will want to delegate different tasks to subordinates in order to maintain a span of control that will keep the number of subordinates, that are reporting, to a manageable level.

(f) Delegation of tasks at large incidents may be by location, where the incident scene is divided into sectors, and subordinate officers coordinate activities within the sector that they have been assigned.

(g) Delegation of tasks can also be by function. Some of the functions that the individual in charge of the ICS may want to delegate at a large incident are: Medical services; evacuation; water supply; resources (equipment, apparatus); media relations; safety; and, site control (integrate activities with police for crowd and traffic control). Also for a large incident, the individual in charge of the ICS will designate several employees as back-up personnel; and a number of safety officers to monitor conditions and recommend safety precautions.

(h) Therefore, no matter what size or complexity an incident may be, by implementing an ICS there will be one individual in charge who makes the decisions and gives directions; and, all actions and communications are coordinated through one central point of command. Such a system should reduce confusion, improve safety, organize and coordinate actions, and should facilitate effective management of the incident.

(10) Site safety and control plans.

(a) The safety and security of response personnel and others in the area of an emergency response incident site

should be of primary concern to the incident commander. The use of a site safety and control plan could greatly assist those in charge of assuring the safety and health of employees on the site.

(b) A comprehensive site safety and control plan should include the following: Summary analysis of hazards on the site and a risk analysis of those hazards; site map or sketch; site work zones (clean zone, transition or decontamination zone, work or hot zone); use of the buddy system; site communications; command post or command center; standard operating procedures and safe work practices; medical assistance and triage area; hazard monitoring plan (air contaminant monitoring, etc.); decontamination procedures and area; and other relevant areas. This plan should be a part of the employer's emergency response plan or an extension of it to the specific site.

(11) Medical surveillance programs.

(a) Workers handling hazardous substances may be exposed to toxic chemicals, safety hazards, biologic hazards, and radiation. Therefore, a medical surveillance program is essential to assess and monitor workers' health and fitness for employment in hazardous waste operations and during the course of work; to provide emergency and other treatment as needed; and to keep accurate records for future reference.

(b) The Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities developed by the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), the United States Coast Guard (USCG), and the Environmental Protection Agency (EPA); October 1985 provides an excellent example of the types of medical testing that should be done as part of a medical surveillance program.

(12) New technology and spill containment programs. Where hazardous substances may be released by spilling from a container that will expose employees to the hazards of the materials, the employer will need to implement a program to contain and control the spilled material. Diking and ditching, as well as use of absorbents like diatomaceous earth, are traditional techniques which have proven to be effective over the years. However, in recent years new products have come into the marketplace, the use of which complement and increase the effectiveness of these traditional methods. These new products also provide emergency responders and others with additional tools or agents to use to reduce the hazards of spilled materials.

These agents can be rapidly applied over a large area and can be uniformly applied or otherwise can be used to build a small dam, thus improving the workers' ability to control spilled material. These application techniques enhance the intimate contact between the agent and the spilled material allowing for the quickest effect by the agent or quickest control of the spilled material. Agents are available to solidify liquid spilled materials, to suppress vapor generation from spilled materials, and to do both. Some special agents, which when applied as recommended by the manufacturer, will react in a controlled manner with the spilled material to neutralize acids or caustics, or greatly reduce the level of hazard of the spilled material.

There are several modern methods and devices for use by emergency response personnel or others involved with spill control efforts to safely apply spill control agents to control spilled material hazards. These include portable pressurized applicators similar to hand-held portable fire extinguishing devices, and nozzle and hose systems similar to portable fire fighting foam systems which allow the operator to apply the agent without having to come into contact with the spilled material. The operator is able to apply the agent to the spilled material from a remote position.

The solidification of liquids provides for rapid containment and isolation of hazardous substance spills. By directing the agent at run-off points or at the edges of the spill, the reactant solid will automatically create a barrier to slow or stop the spread of the material. Clean-up of hazardous substances as greatly improved when solidifying agents, acid or caustic neutralizers, or activated carbon absorbents are used. Properly applied, these agents can totally solidify liquid hazardous substances or neutralize or absorb them, which results in materials which are less hazardous and easier to handle, transport, and dispose of. The concept of spill treatment, to create less hazardous substances, will improve the safety and level of protection of employees working at spill clean-up operations or emergency response operations to spills of hazardous substances.

The use of vapor suppression agents for volatile hazardous substances, such as flammable liquids and those substances which present an inhalation hazard, is important for protecting workers. The rapid and uniform distribution of the agent over the surface of the spilled material can provide quick vapor knockdown. There are temporary and long-term foam-type agents which are effective on vapors and dusts, and activated carbon adsorption agents which are effective for vapor control and soaking-up of the liquid. The proper use of hose lines or hand-held portable pressurized applicators provides good mobility and permits the worker to deliver the agent from a safe distance without having to step into the untreated spilled material. Some of these systems can be recharged in the field to provide coverage of larger spill areas than the design limits of a single charged applicator unit. Some of the more effective agents can solidify the liquid flammable hazardous substances and at the same time elevate the flashpoint above 140°F so the resulting substance may be handled as a nonhazardous waste material if it meets the United States Environmental Protection Agency's 40 CFR Part 261 requirements (see particularly Sec. 261.21).

All workers performing hazardous substance spill control work are expected to wear the proper protective clothing and equipment for the materials present and to follow the employer's established standard operating procedures for spill control. All involved workers need to be trained in the established operating procedures; in the use and care of spill control equipment; and in the associated hazards and control of such hazards of spill containment work.

These new tools and agents are the things that employers will want to evaluate as part of their new technology program. The treatment of spills of hazardous substances or wastes at an emergency incident as part of the immediate spill containment and control efforts is sometimes acceptable to

EPA and a permit exception is described in 40 CFR 264.1 (g)(8) and 265.1 (c)(11).

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41084, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41085 Appendix D—References. The following references may be consulted for further information on the subject of this notice:

(1) OSHA Instruction DFO CPL 2.70 - January 29, 1986, Special Emphasis Program: Hazardous Waste Sites.

(2) OSHA Instruction DFO CPL 2-2.37A - January 29, 1986, Technical Assistance and Guidelines for Superfund and Other Hazardous Waste Site Activities.

(3) OSHA Instruction DTS CPL 2.74 - January 29, 1986, Hazardous Waste Activity Form, OSHA 175.

(4) Hazardous Waste Inspections Reference Manual, U.S. Department of Labor, Occupational Safety and Health Administration, 1986.

(5) Memorandum of Understanding Among the National Institute for Occupational Safety and Health, the Occupational Safety and Health Administration, the United States Coast Guard, and the United States Environmental Protection Agency; Guidance for Worker Protection During Hazardous Waste Site Investigations and Clean-up and Hazardous Substance Emergencies; December 18, 1980.

(6) National Priorities List, 1st Edition, October 1984; U.S. Environmental Protection Agency, Revised periodically.

(7) The Decontamination of Response Personnel, Field Standard Operating Procedures (F.S.O.P.) 7; U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Hazardous Response Support Division, December 1984.

(8) Preparation of a Site Safety Plan, Field Standard Operating Procedures (F.S.O.P.) 9; U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Hazardous Response Support Division, April 1985.

(9) Standard Operating Safety Guidelines; U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Hazardous Response Support Division, Environmental Response Team; November 1984.

(10) Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), U.S. Coast Guard (USCG), and Environmental Protection Agency (EPA); October 1985.

(11) Protecting Health and Safety at Hazardous Waste Sites: An Overview, U.S. Environmental Protection Agency, EPA/625/9-85/006; September 1985.

(12) Hazardous Waste Sites and Hazardous Substance Emergencies, NIOSH Worker Bulletin, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health; December 1982.

(13) Personal Protective Equipment for Hazardous Materials Incidents: A Selection Guide; U.S. Department of Health and Human Services, Public Health Service, Centers

for Disease Control, National Institute for Occupational Safety and Health; October 1984.

(14) Fire Service Emergency Management Handbook, International Association of Fire Chiefs Foundation, 101 East Holly Avenue, Unit 10B, Sterling, VA 22170, January 1985.

(15) Emergency Response Guidebook, U.S. Department of Transportation, Washington, D.C., 1987.

(16) Report to the Congress on Hazardous Materials Training, Planning and Preparedness, Federal Emergency Management Agency, Washington, D.C., July 1986.

(17) Workbook for Fire Command, Alan V. Brunacini and J. David Beageron, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, 1985.

(18) Fire Command, Alan V. Brunacini, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, 1985.

(19) Incident Command System, Fire Protection Publications, Oklahoma State University, Stillwater, OK 74078, 1983.

(20) Site Emergency Response Planning, Chemical Manufacturers Association, Washington, D.C. 20037, 1986.

(21) Hazardous Materials Emergency Planning Guide, NRT-1, Environmental Protection Agency, Washington, D.C., March 1987.

(22) Community Teamwork: Working Together to Promote Hazardous Materials Transportation Safety. U.S. Department of Transportation, Washington, D.C., May 1983.

(23) Disaster Planning Guide for Business and Industry, Federal Emergency Management Agency, Publication No. FEMA 141, August 1987.

[Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41085, filed 3/23/99, effective 6/23/99.]

WAC 296-62-41086 Appendix E—Training curriculum guidelines. The following nonmandatory general criteria may be used for assistance in developing training curriculum used to meet the training requirements of Part R.

These are generic guidelines and they are not presented as a complete training curriculum for any specific employer. Site-specific training programs must be developed on the basis of a needs assessment of the emergency response operation in accordance with this chapter (chapter 296-62 WAC, Part R).

The guidance set forth here presents a highly effective program that in the areas covered would meet or exceed the regulatory requirements. In addition, other approaches could meet the regulatory requirements.

Suggested general criteria:

Definitions:

Suggested core criteria:

"Competent" means possessing the skills, knowledge, experience, and judgment to perform assigned tasks or activities satisfactorily as determined by the employer.

"Demonstration" means the showing by actual use of equipment or procedures.

"Hands-on training" means training in a simulated work environment that permits each student to have experience performing tasks, making decisions, or using equipment appropriate to the job assignment for which the training is being conducted.

"Initial training" means training required before beginning work.

"Lecture" means an interactive discourse with a class lead by an instructor.

"Proficient" means meeting a stated level of achievement.

"Site-specific" means individual training directed to the operations of a specific job site.

"Training hours" means the number of hours devoted to lecture, learning activities, small group work sessions, demonstration, evaluations, or hands-on experience.

(1) Training facility. The training facility should have available sufficient resources, equipment, and site locations to perform concise and hands-on training when appropriate. Training facilities should have sufficient organization, support staff, and services to conduct training in each of the courses offered.

(2) Training director. Each training program should be under the direction of a training director who is responsible for the program. The training director should have a minimum of two years of employee education experience.

(3) Instructors. Instructors should be deemed competent on the basis of previous documented experience in their area of instruction, successful completion of a "train-the-trainer" program specific to the topics they will teach, and an evaluation of instructional competence by the training director.

(a) Instructors should be required to maintain professional competency by participating in continuing education or professional development programs or by successfully completing an annual refresher course and having an annual review by the training director.

(b) The annual review by the training director should include observation of an instructor's delivery, a review of those observations with the trainer, and an analysis of any instructor or class evaluations completed by the students during the previous year.

(4) Course materials. The training director should approve all course materials to be used by the training provider. Course materials should be reviewed and updated at least annually. Materials and equipment should be in good working order and maintained properly.

(a) All written and audio-visual materials in training curricula should be peer reviewed by technically competent outside reviewers or by a standing advisory committee.

(b) Reviewers should possess expertise in the following disciplines were applicable: Occupational health, industrial hygiene and safety, chemical/environmental engineering, employee education, or emergency response. One or more of the peer reviewers should be an employee experienced in the work activities to which the training is directed.

(5) Students. The program for accepting students should include:

(a) Assurance that the student is or will be involved in work where chemical exposures are likely and that the student possesses the skills necessary to perform the work.

(b) A policy on the necessary medical clearance.

(6) Ratios. Student-instructor ratios should not exceed thirty students per instructor. Hands-on activity requiring the use of personal protective equipment should have the following student-instructor ratios: For Level C or Level D per-

sonal protective equipment the ratio should be ten students per instructor. For Level A or Level B personal protective equipment the ratio should be five students per instructor.

(7) Proficiency assessment. Proficiency should be evaluated and documented by the use of a written assessment and a skill demonstration selected and developed by the training director and training staff. The assessment and demonstration should evaluate the knowledge and individual skills developed in the course of training. The level of minimum achievement necessary for proficiency shall be specified in writing by the training director.

(a) If a written test is used, there should be a minimum of fifty questions. If a written test is used in combination with a skills demonstration, a minimum of twenty-five questions should be used. If a skills demonstration is used, the tasks chosen and the means to rate successful completion should be fully documented by the training director.

(b) The content of the written test or of the skill demonstration shall be relevant to the objectives of the course.

The written test and skill demonstration should be updated as necessary to reflect changes in the curriculum and any update should be approved by the training director.

(c) The proficiency assessment methods, regardless of the approach or combination of approaches used, should be justified, documented and approved by the training director.

(d) The proficiency of those taking the additional courses for supervisors should be evaluated and documented by using proficiency assessment methods acceptable to the training director. These proficiency assessment methods must reflect the additional responsibilities borne by supervisory personnel in hazardous waste operations or emergency response.

(8) Course certificate. Written documentation should be provided to each student who satisfactorily completes the training course. The documentation should include:

(a) Student's name.

(b) Course title.

(c) Course date.

(d) Statement that the student has successfully completed the course.

(e) Name and address of the training provider.

(f) An individual identification number for the certificate.

(g) List of the levels of personal protective equipment used by the student to complete the course.

(i) This documentation may include a certificate and an appropriate wallet-sized laminated card with a photograph of the student and the above information.

(ii) When such course certificate cards are used, the individual identification number for the training certificate should be shown on the card.

(9) Recordkeeping. Training providers should maintain records listing the dates courses were presented, the names of the individual course attendees, the names of those students successfully completing each course, and the number of training certificates issued to each successful student. These records should be maintained for a minimum of five years after the date an individual participated in a training program offered by the training provider. These records should be available and provided upon the student's request or as mandated by law.

(10) Program quality control. The training director should conduct or direct an annual written audit of the training program. Program modifications to address deficiencies, if any, should be documented, approved, and implemented by the training provider. The audit and the program modification documents should be maintained at the training facility.

Suggested Program Quality Control Criteria:

Factors listed here are suggested criteria for determining the quality and appropriateness of employee health and safety training for hazardous waste operations and emergency response.

(a) Training plan. Adequacy and appropriateness of the training program's curriculum development, instructor training, distribution of course materials, and direct student training should be considered, including:

(i) The duration of training, course content, and course schedules/agendas;

(ii) The different training requirements of the various target populations, as specified in the appropriate generic training curriculum;

(iii) The process for the development of curriculum, which includes appropriate technical input, outside review, evaluation, program pretesting.

(iv) The adequate and appropriate inclusion of hands-on, demonstration, and instruction methods;

(v) Adequate monitoring of student safety, progress, and performance during the training.

(b) Program management, training director, staff, and consultants. Adequacy and appropriateness of staff performance and delivering an effective training program should be considered, including:

(i) Demonstration of the training director's leadership in assuring quality of health and safety training;

(ii) Demonstration of the competency of the staff to meet the demands of delivering high quality hazardous waste employee health and safety training;

(iii) Organization charts establishing clear lines of authority;

(iv) Clearly defined staff duties including the relationship of the training staff to the overall program;

(v) Evidence that the training organizational structure suits the needs of the training program;

(vi) Appropriateness and adequacy of the training methods used by the instructors;

(vii) Sufficiency of the time committed by the training director and staff to the training program;

(viii) Adequacy of the ratio of training staff to students;

(ix) Availability and commitment of the training program of adequate human and equipment resources in the areas of:

(A) Health effects;

(B) Safety;

(C) Personal protective equipment (PPE);

(D) Operational procedures;

(E) Employee protection practices/procedures;

(x) Appropriateness of management controls;

(xi) Adequacy of the organization and appropriate resources assigned to assure appropriate training;

(xii) In the case of multiple-site training programs, adequacy of management of the satellite centers.

(c) Training facilities and resources. Adequacy and appropriateness of the facilities and resources for supporting the training program should be considered, including:

(i) Space and equipment to conduct the training;

(ii) Facilities for representative hands-on training;

(iii) In the case of multiple-site programs, equipment and facilities at the satellite centers;

(iv) Adequacy and appropriateness of the quality control and evaluations program to account for instructor performance;

(v) Adequacy and appropriateness of the quality control and evaluation program to ensure appropriate course evaluation, feedback, updating, and corrective action;

(vi) Adequacy and appropriateness of disciplines and expertise being used within the quality control and evaluation program;

(vii) Adequacy and appropriateness of the role of student evaluations to provide feedback for training program improvement.

(d) Quality control and evaluation. Adequacy and appropriateness of quality control and evaluation plans for training programs should be considered, including:

(i) A balanced advisory committee and/or competent outside reviewers to give overall policy guidance;

(ii) Clear and adequate definition of the composition and active programmatic role of the advisory committee or outside reviewers;

(iii) Adequacy of the minutes or reports of the advisory committee or outside reviewers' meetings or written communication;

(iv) Adequacy and appropriateness of the quality control and evaluations program to account for instructor performance;

(v) Adequacy and appropriateness of the quality control and evaluation program to ensure appropriate course evaluation, feedback, updating, and corrective action;

(vi) Adequacy and appropriateness of disciplines and expertise being used within the quality control and evaluation program;

(vii) Adequacy and appropriateness of the role of student evaluations to provide feedback for training program improvement.

(e) Students. Adequacy and appropriateness of the program for accepting students should be considered, including:

(i) Assurance that the student already possess the necessary skills for their job, including necessary documentation;

(ii) Appropriateness of methods the program uses to ensure that recruits are capable of satisfactorily completing training;

(iii) Review and compliance with any medical clearance policy.

(f) Institutional environment and administrative support. The adequacy and appropriateness of the institutional environment and administrative support system for the training program should be considered, including:

(i) Adequacy of the institutional commitment to the employee training program;

(ii) Adequacy and appropriateness of the administrative structure and administrative support.

(g) Summary of evaluation questions. Key questions for evaluating the quality and appropriateness of an overall training program should include the following:

- (i) Are the program objectives clearly stated?
- (ii) Is the program accomplishing its objectives?
- (iii) Are appropriate facilities and staff available?
- (iv) Is there an appropriate mix of classroom, demonstration, and hands-on training?
- (v) Is the program providing quality employee health and safety training that fully meets the intent of regulatory requirements?
- (vi) What are the program's main strengths?
- (vii) What are the program's main weaknesses?
- (viii) What is recommended to improve the program?
- (ix) Are instructors instructing according to their training outlines?
- (x) Is the evaluation tool current and appropriate for the program content?
- (xi) Is the course material current and relevant to the target group?

Suggested Training Curriculum Guidelines:

The following training curriculum guidelines are for those operations specifically identified in this Part R as requiring training. Issues such as qualifications of instructors, training certification, and similar criteria appropriate to all categories of operations addressed in this Part R have been covered in the preceding section and are not addressed in each of the generic guidelines.

- (h) Emergency response training.
- (i) General considerations. Emergency response organizations are required to consider the topics listed in WAC 296-62-41020. Emergency response organizations may use some or all of the following topics to supplement those mandatory topics when developing their response training programs. Many of the topics would require an interaction between the response provider and the individuals responsible for the site where the response would be expected.
 - (A) Hazard recognition, including:
 - (I) Nature of hazardous substances present;
 - (II) Practical applications of hazard recognition, including presentations on biology, chemistry, and physics.
 - (B) Principles of toxicology, biological monitoring, and risk assessment.
 - (C) Safe work practices and general site safety.
 - (D) Engineering controls and hazardous waste operations.
 - (E) Site safety plans and standard operating procedures.
 - (F) Decontamination procedures and practices.
 - (G) Emergency procedures, first aid, and self-rescue.
 - (H) Safe use of field equipment.
 - (I) Storage, handling, use and transportation of hazardous substances.
 - (J) Use, care, and limitations of personal protective equipment.
 - (K) Safe sampling techniques.
 - (L) Rights and responsibilities of employees under WISHA and other related regulations and laws concerning right-to-know, safety and health, compensations and liability.
 - (M) Medical monitoring requirements.
 - (N) Community relations.

(ii) Suggested criteria for specific courses.

- (A) First responder awareness level.
 - (I) Review of and demonstration of competency in performing the applicable skills of WAC 296-62-41010.
 - (II) Hands-on experience with the U.S. Department of Transportation's Emergency Response Guidebook (ERG) and familiarization with chapter 296-62 WAC, Part C, the hazard communication standard.
 - (III) Review of the principles and practices for analyzing an incident to determine both the hazardous substances present and the basic hazard and response information for each hazardous substance present.
 - (IV) Review of procedures for implementing actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including emergency notification procedures and follow-up communications.
 - (V) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.
 - (VI) Awareness and knowledge of the competencies for the First Responder at the Awareness Level covered in the National Fire Protection Association's Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(B) First responder operations level.

- (I) Review of and demonstration of competency in performing the applicable skills of WAC 296-62-41010.
- (II) Hands-on experience with the U.S. Department of Transportation's Emergency Response Guidebook (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, and other relevant sources of information addressing hazardous substance releases. Familiarization with chapter 296-62 WAC, Part C, the hazard communication standard.
- (III) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, the likely behavior of the hazardous substance and its container, the types of hazardous substance transportation containers and vehicles, the types and selection of the appropriate defensive strategy for containing the release.
- (IV) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including extended emergency notification procedures and follow-up communications.
- (V) Review of the principles and practice for proper selection and use of personal protective equipment.
- (VI) Review of the principles and practice of personnel and equipment decontamination.
- (VII) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(VIII) Awareness and knowledge of the competencies for the First Responder at the Operations Level covered in the National Fire Protection Association's Standard No. 472,

Professional Competence of Responders to Hazardous Materials Incidents.

(C) Hazardous materials technician.

(I) Review of and demonstration of competency in performing the applicable skills of WAC 296-62-41010.

(II) Hands-on experience with written and electronic information relative to response decision making including, but not limited to, the U.S. Department of Transportation's Emergency Response Guidebook (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with chapter 296-62 WAC, Part C, the hazard communication standard.

(III) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, the likely behavior of the hazardous substance and its container, the types of hazardous substance transportation containers and vehicles involved in the release, the appropriate strategy for approaching release sites and containing the release.

(IV) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including extended emergency notification procedures and follow-up communications.

(V) Review of the principles and practice for proper selection and use of personal protective equipment.

(VI) Review of the principles and practices of establishing exposure zones, proper decontamination and medical surveillance stations and procedures.

(VII) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(VIII) Awareness and knowledge of the competencies for the Hazardous Materials Technician covered in the National Fire Protection Association's Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(D) Hazardous materials specialist.

(I) Review of and demonstration of competency in performing the applicable skills of WAC 296-62-41010.

(II) Hands-on experience with retrieval and use of written and electronic information relative to response decision making including, but not limited to, the U.S. Department of Transportation's Emergency Response Guidebook (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with chapter 296-62 WAC, Part C, the hazard communication standard.

(III) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, and the likely behavior of the hazardous substance and its container, vessel, or vehicle.

(IV) Review of the principles and practices for identification of the types of hazardous substance transportation containers, vessels and vehicles involved in the release; selecting and using the various types of equipment available for plugging or patching transportation containers, vessels or vehicles; organizing and directing the use of multiple teams of hazardous material technicians and selecting the appropriate strategy for approaching release sites and containing or stopping the release.

(V) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, including knowledge of the available public and private response resources, establishment of an incident command post, direction of hazardous material technician teams, and extended emergency notification procedures and follow-up communications.

(VI) Review of the principles and practice for proper selection and use of personal protective equipment.

(VII) Review of the principles and practices of establishing exposure zones and proper decontamination, monitoring and medical surveillance stations and procedures.

(VIII) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(IX) Awareness and knowledge of the competencies for the Off-site Specialist Employee covered in the National Fire Protection Association's Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(E) Incident commander.

The incident commander is the individual who, at any one time, is responsible for and in control of the response effort. This individual is the person responsible for the direction and coordination of the response effort. An incident commander's position should be occupied by the most senior, appropriately trained individual present at the response site. Yet, as necessary and appropriate by the level of response provided, the position may be occupied by many individuals during a particular response as the need for greater authority, responsibility, or training increases. It is possible for the first responder at the awareness level to assume the duties of incident commander until a more senior and appropriately trained individual arrives at the response site.

Therefore, any emergency responder expected to perform as an incident commander should be trained to fulfill the obligations of the position at the level of response they will be providing including the following:

(I) Ability to analyze a hazardous substance incident to determine the magnitude of the response problem.

(II) Ability to plan and implement an appropriate response plan within the capabilities of available personnel and equipment.

(III) Ability to implement a response to favorably change the outcome of the incident in a manner consistent with the local emergency response plan and the organization's standard operating procedures.

(IV) Ability to evaluate the progress of the emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.

(V) Ability to adjust the response plan to the conditions of the response and to notify higher levels of response when required by the changes to the response plan.

[Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-41086, filed 3/23/99, effective 6/23/99.]

Chapter 296-65 WAC

ASBESTOS REMOVAL AND ENCAPSULATION

WAC

296-65-003	Definitions.
296-65-010	Asbestos worker certification.
296-65-012	Asbestos supervisor certification.
296-65-020	Notification requirements.
296-65-025	Fees.
296-65-030	Methods of compliance.

WAC 296-65-003 Definitions. Unless the context clearly requires otherwise, the definitions in this section apply throughout this standard.

"Approved" means approved by the department.

"Asbestos" includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

"Asbestos fiber" means asbestos fiber as defined in WAC 296-62-07703 as "fiber."

"Asbestos abatement project" means an asbestos project involving three square feet or three linear feet, or more, of asbestos containing material.

"Asbestos project" includes the construction, demolition, repair, remodeling, maintenance or renovation of any public or private building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of material or outdoor activity releasing or likely to release asbestos fibers into the air.

"Certified asbestos contractor" means any partnership, firm, association, corporation or sole proprietorship, registered under chapter 18.27 RCW, that submits a bid, or contracts to remove or encapsulate asbestos for another and is certified by the department to remove or encapsulate asbestos.

"Certificate" means a certificate issued by the department that shall include the name of person awarded the certificate, certificate number, the discipline for which certification was conferred, training and examination dates, the course provider's name and address, and the course provider's telephone number, expiration date, and a statement that the person receiving the certificate has completed the training for asbestos accreditation under TSCA Title II.

"Certified asbestos supervisor" means an individual who is certified by the department under WAC 296-65-012.

"Certified asbestos worker" means an individual certified by the department under WAC 296-65-010.

"Department" means the department of labor and industries.

"Demolition" means the activity of razing a structure which includes the wrecking, removal, or dismantling of any

load-supporting structural member of any facility including any related handling operations.

"Director" means the director of the department of labor and industries or the director's designee.

"Emergency project" means a project that was not planned but results from a sudden, unexpected event and includes operations which are necessitated by nonroutine failures of equipment or systems.

"Encapsulation" means the application of an encapsulant to asbestos containing materials to control the release of asbestos fibers into the air. The encapsulation process either creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

"EPA MAP" means the environmental protection agency model accreditation plan for asbestos requirements in 40 CFR Part 763.

"HEPA filtration" means high-efficiency particulate air filtration found in respirators and vacuum systems capable of filtering 0.3 micron particles with 99.97% efficiency.

"Intact" means that the asbestos containing material has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix.

"NESHAP" means the National Emission Standards for Hazardous Air Pollutants.

"Owner" means the person who owns any public or private building, structure, facility, or mechanical system, or the remnants thereof, or the agent of such person, but does not include individuals who work on asbestos projects in their own single-family residences, no part of which is used for commercial purposes.

"Person" means any individual, partnership, firm, association, corporation, sole proprietorship, or the state of Washington or its political subdivisions.

"Revocation" means a permanent withdrawal of a certification issued by the department.

"Suspension" means a temporary withdrawal of a certification issued by the department. No suspension shall be less than six months or longer than one year.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130, 99-17-026, § 296-65-003, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060, 96-05-056, § 296-65-003, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW, 89-21-018 (Order 89-10), § 296-65-003, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-003, filed 11/30/87. Statutory Authority: SSB 4209, 1985 c 387, 85-21-080 (Order 85-30), § 296-65-003, filed 10/22/85.]

WAC 296-65-010 Asbestos worker certification. (1) For the purposes of this section "individual" means any natural person.

(2) To qualify for an asbestos worker certificate, an individual must do the following:

(a) Successfully complete an approved asbestos worker training course;

(b) Achieve a score of at least seventy percent on a one hundred question multiple choice closed book examination approved by the department but administered by the training course sponsor. If an individual does not pass the examination, then another examination (meeting the above criteria) may be given after a sufficient period of study. The new

(IV) Ability to evaluate the progress of the emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.

(V) Ability to adjust the response plan to the conditions of the response and to notify higher levels of response when required by the changes to the response plan.

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"Certified asbestos contractor" means any partnership, firm, association, corporation or sole proprietorship, registered under chapter 18.27 RCW, that submits a bid, or contracts to remove or encapsulate asbestos for another and is certified by the department to remove or encapsulate asbestos.

"Certificate" means a certificate issued by the department that shall include the name of person awarded the certificate, certificate number, the discipline for which certification was conferred, training and examination dates, the course provider's name and address, and the course provider's telephone number, expiration date, and a statement that the person receiving the certificate has completed the training for asbestos accreditation under TSCA Title II.

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"Person" means any individual, partnership, firm, association, corporation, sole proprietorship, or the state of Washington or its political subdivisions.

"Revocation" means a permanent withdrawal of a certification issued by the department.

"Suspension" means a temporary withdrawal of a certification issued by the department. No suspension shall be less than six months or longer than one year.

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WAC 296-65-010 Asbestos worker certification. (1) For the purposes of this section "individual" means any natural person.

(2) To qualify for an asbestos worker certificate, an individual must do the following:

(a) Successfully complete an approved asbestos worker training course;

(b) Achieve a score of at least seventy percent on a one hundred question multiple choice closed book examination approved by the department but administered by the training course sponsor. If an individual does not pass the examination, then another examination (meeting the above criteria) may be given after a sufficient period of study. The new

examination must not duplicate more than fifty percent of the questions used on prior examinations;

(c) Submit to the department a timely application validated by an approved training course sponsor. To be considered timely, an application must be received by the department no later than sixty days after the completion of the course. In the event that an application is not timely, the individual will be required to pass, with a score of at least seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be assessed when the application is submitted to the department; and

(d) Pay the fee prescribed in WAC 296-65-025.

(3) Individuals must not perform any asbestos project work prior to issuance of the certificate.

(4) Certificates will be issued and mailed to the individual applicants and will be valid for one year from the date of issuance.

(5) Certified asbestos workers shall attend an eight-hour worker refresher course prior to certificate renewal.

(a) The course shall, at a minimum, adequately review the subjects required by WAC 296-65-005, update information on state-of-the-art procedures and equipment, and review regulatory changes and interpretations. The department may require specific subjects.

(b) An application for renewal of the certificate must be validated by the refresher training course instructor.

(c) The refresher course must be taken prior to expiration of the certificate.

(d) The department must receive the certificate renewal application no later than the expiration date of the current certificate. Applicants missing this renewal deadline will be required to pass, with a score of seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be charged to take this examination.

(e) Individuals whose certificates have been expired for more than six months will be required to retake the entire basic worker course.

(6) The initial TSCA Title II worker accreditation certificate and the current worker certificate must be available for inspection at all times at the location of the asbestos project.

(7) The department may suspend or revoke a certificate as provided in WAC 296-65-050 and chapter 296-350 WAC.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130, 99-17-026, § 296-65-010, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060, 96-05-056, § 296-65-010, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW, 89-21-018 (Order 89-10), § 296-65-010, filed 10/10/89, effective 11/24/89. Statutory Authority: SSB 4209, 1985 c 387, 85-21-080 (Order 85-30), § 296-65-010, filed 10/22/85.]

WAC 296-65-012 Asbestos supervisor certification.

(1) For the purposes of this section, "individual" means any natural person.

(2) To qualify for an asbestos supervisor certificate, an individual must meet the following criteria:

(a) Have at least 1600 hours of experience in one or more of the following disciplines:

- (i) Asbestos abatement;
- (ii) Asbestos project design;
- (iii) Consultation on asbestos abatement projects;
- (iv) Operations and maintenance program supervision;

(v) Construction project supervision;

(b) Successfully complete an approved asbestos supervisor training course;

(c) Achieve a score of at least seventy percent on a one hundred question multiple choice closed book examination approved by the department but administered by the training course sponsor. If an individual does not pass the examination, then another examination (meeting the above criteria) may be given after a sufficient period of study. The new examination must not duplicate more than fifty percent of the questions used on prior examinations;

(d) Submit to the department a timely application validated by an approved training course sponsor. To be considered timely, an application must be received by the department no later than sixty days after the completion of the course. In the event that an application is not timely, the individual will be required to pass, with a score of at least seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be assessed when the application is submitted to the department; and

(e) Pay the fee prescribed in WAC 296-65-025.

(3) An individual must not supervise any asbestos project prior to issuance of the certificate.

(4) Certificates will be issued and mailed to the individual applicants and will be valid for one year from the date of issuance.

(5) A certified asbestos supervisor must attend an eight-hour supervisor refresher course prior to certificate renewal. It is not necessary to also take a worker refresher course.

(a) The course must, at a minimum, adequately review the subjects required by WAC 296-65-007, update information on state-of-the-art procedures and equipment, and review regulatory changes and interpretations. The department may require specific subjects.

(b) An application for renewal of the certificate must be validated by the refresher training course instructor.

(c) The refresher course must be taken prior to expiration of the certificate.

(d) The department must receive the certificate renewal application no later than the expiration date of the current certificate. Applicants missing this renewal deadline will be required to pass, with a score of seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be charged to take this examination.

(e) Individuals whose certificates have been expired for more than six months will be required to retake the entire basic supervisor course.

(6) The initial TSCA Title II supervisor accreditation certificate and the current supervisor certificate must be available for inspection at all times at the location of the asbestos project.

(7) The department may suspend or revoke a certificate as provided in WAC 296-65-050 and chapter 296-350 WAC.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130, 99-17-026, § 296-65-012, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060, 96-05-056, § 296-65-012, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW, 89-21-018 (Order 89-10), § 296-65-012, filed 10/10/89, effective 11/24/89.]

WAC 296-65-020 Notification requirements. (1)

Before any person or individual begins an asbestos project as defined in WAC 296-62-07722 and 296-65-003 involving more than forty-eight square feet or ten linear feet, unless the surface area of the pipe is greater than forty-eight square feet, of asbestos containing material, written notification must be provided to the department. Notices must include:

- (a) Name and address of the owner and contractor.
- (b) Description of the facility including size, age, and prior use of the facility.
- (c) Amount of asbestos-containing material to be removed or encapsulated.
- (d) Location of the facility.
- (e) Exact starting and completion dates of the asbestos project, including shifts during which abatement work will be accomplished. These dates must correspond to the dates specified for asbestos removal in the contract. Any change in these dates or work shifts must be communicated to the department by an amended notice filed at the office where the original notice was filed.

• When the starting date or time changes, the amended notice must be filed no later than 5:00 p.m. on the business day prior to the starting date in the original notice and prior to the new starting date.

• When the completion date or time changes, the amended notice must be filed before completion of the project, and within eight hours from when the person learns that the change will occur.

Notice may be filed by facsimile (FAX).

(f) Nature of the project and methods used to remove or encapsulate the material.

(2) Notices must be received by the department no later than ten days prior to the start of the project. Notices must be sent directly to the department of labor and industries regional office having jurisdiction on the project.

(3) The director may waive the prenotification requirement upon written request of an owner for large-scale, ongoing projects. In granting such a waiver, the director will require the owner to provide prenotification if significant changes in personnel, methodologies, equipment, work site, or work procedures occur or are likely to occur. The director will further require annual resubmittal of such notification.

(4) The director, upon review of an owner's reports, work practices, or other data available as a result of inspections, audits, or other authorized activities, may reduce the size threshold for prenotification required by this section. Such a change will be based on the director's determination that significant problems in personnel, methodologies, equipment, work site, or work procedures are creating the potential for violations of this chapter.

(5) Emergency projects which disturb or release asbestos into the air must be reported to the department within three working days after commencement of the project in the manner otherwise required under this chapter. The employees, the employees' collective bargaining representative or employee representative, if any, and other persons at the project area must be notified of the emergency as soon as possible by the person undertaking the emergency project. A notice describing the nature of the emergency project must be clearly posted adjacent to the work area.

(6) Incremental phasing in the conduct or design of asbestos projects or otherwise conducting or designing asbestos projects of a size less than the threshold exemption specified in subsection (1) of this section, with the intent of avoiding the notification requirements, is a violation of this chapter.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-020, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-020, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-020, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-020, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-65-020, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-020, filed 10/22/85.]

WAC 296-65-025 Fees. (1) A nonrefundable administrative fee of twenty-five dollars will be assessed for each initial, replacement, or renewal asbestos worker certificate application. The fee (check or money order) must accompany the certificate application and be made payable to the department. An application form may be obtained from any approved training course instructor or directly from the department.

(2) A nonrefundable administrative fee of thirty-five dollars will be assessed for each initial, replacement, or renewal asbestos supervisor certificate application. The fee (check or money order) must accompany the certificate application and be made payable to the department. An application form may be obtained from any approved training course instructor or directly from the department.

(3) A nonrefundable administrative fee of one thousand dollars will be assessed for each initial or renewal contractor certificate application. The fee (check or money order) must accompany the certificate application and be made payable to the department. An application form may be obtained from the department.

Note: In circumstances where it is necessary to coordinate an expiration date with the date of expiration of a contractor registration issued under chapter 18.27 RCW, certificates may be valid for less than one year. In such circumstances, the certificate fee prescribed in WAC 296-65-025 will be prorated accordingly for the initial application only.

(4) A nonrefundable administrative fee of one thousand dollars will be assessed for each initial and renewal application for training course approval. A check or money order must accompany any application made under the provisions of WAC 296-65-015.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040, and 49.26.130. 99-17-026, § 296-65-025, filed 8/10/99, effective 11/10/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-025, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-025, filed 11/30/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-025, filed 10/22/85.]

WAC 296-65-030 Methods of compliance. (1) Before submitting a bid or working on an asbestos abatement project, any person or individual must obtain an asbestos contractor certificate as provided in WAC 296-65-017 and must have in its employ at least one certified asbestos supervisor responsible for supervising all asbestos projects undertaken by the contractor.

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(2) A certified asbestos supervisor will not be required on asbestos projects involving less than three square feet or three linear feet of asbestos-containing material unless the surface area of the pipe is greater than three square feet. A certified asbestos supervisor is required for all Class I and II asbestos work in accordance with WAC 296-62-07728(4).

(3) No employee or other individual is eligible to do work or supervise an asbestos project without being issued a certificate by the department.

(a) Employees performing Class I or Class II asbestos work must be certified asbestos workers as specified in WAC 296-62-07722.

(b) Employees performing Class III or Class IV asbestos work specified by WAC 296-62-07722 as an asbestos project shall be certified asbestos workers.

(4) No person may assign any employee, contract with, or permit any individual, to work on an asbestos project as specified in WAC 296-62-07722 in any facility without the project being performed by a certified asbestos worker.

(5) A certified asbestos supervisor must provide direct, on-site supervision for an asbestos project. When an employer conducts an asbestos abatement project in its own facility by its own certified employees, supervision may be performed in the regular course of a certified asbestos supervisor's duties. Asbestos workers must have access to and be under the control of certified asbestos supervisors throughout the duration of the project.

(6) Any construction, renovation, remodeling, maintenance, repair, or demolition which was started without meeting the requirements of this section must be halted immediately and cannot be resumed before meeting such requirements.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-030, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-65-030, filed 9/5/97, effective 11/5/97; 96-05-056, § 296-65-030, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-030, filed 10/10/89, effective 11/24/89. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-65-030, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-030, filed 10/22/85.]

Chapter 296-78 WAC

SAFETY STANDARDS FOR SAWMILLS AND WOODWORKING OPERATIONS

WAC

296-78-540	First-aid training and certification.
296-78-545	First-aid supplies.
296-78-550	First-aid station.
296-78-555	Repealed.
296-78-665	Sanding machines.
296-78-71019	Exhaust systems.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-78-555	First-aid room. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-555, filed 8/27/81.] Repealed by 00-01-038, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050.
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WAC 296-78-540 First-aid training and certification.

The employer must ensure that first-aid trained personnel are

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available to help employees who are injured or who become acutely ill on the job. The employer must meet this requirement by maintaining first-aid trained staff on the job site. The employer must ensure that:

(1) Each person in charge of employees has first-aid training; or another person with first-aid training is present or available to the employees. Such training must be successfully completed every two years as required in chapter 296-24 WAC, Part A-1;

(2) Documentation of first-aid training is kept as required in chapter 296-24 WAC, Part A-1;

(3) Emergency telephone numbers are adequately posted;

(4) First-aid training includes the core elements contained in chapter 296-24 WAC, Part A-1.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 00-01-038, § 296-78-540, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-540, filed 8/27/81.]

WAC 296-78-545 First-aid supplies. The first-aid kits and supplies requirements of the general safety and health standards, chapter 296-24 WAC, Part A-1 apply within the scope of chapter 296-78 WAC.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 00-01-038, § 296-78-545, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-545, filed 8/27/81.]

WAC 296-78-550 First-aid station. Employers with fifty or more employees per shift at one location must establish a first-aid station in accordance with the requirements in chapter 296-24 WAC, Part A-1.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 00-01-038, § 296-78-550, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-550, filed 8/27/81.]

WAC 296-78-555 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-78-665 Sanding machines. (1) Each belt sanding machine shall have both pulleys enclosed in such a manner as to guard the points where the belt runs onto the pulleys. The edges of the unused run of belt shall be enclosed or otherwise guarded from contact by employees.

(2) Each drum sanding machine shall be provided with a guard so arranged as to completely enclose the revolving drum except such portion required for the application of the material to be finished. Guards with hinges to facilitate the insertion of sandpaper may be installed. The exhaust hood may form part or all of this guard. When so used, the hood shall conform to the specifications as given under exhaust systems in WAC 296-78-710.

(3) All standard stationary sanding machines shall be provided with exhaust systems in conformity with the section of this code dealing with exhaust systems.

(4) All portable sanding machines shall be provided with means of removing excessive dust, or employees using equipment shall be provided with such necessary respiratory protective equipment as will conform to the requirements of

the general occupational health standards, chapter 296-62 WAC, Part E.

(5) The requirements of WAC 296-24-16533, general safety and health standards, shall be applicable to sanding machines.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-78-665, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-665, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-665, filed 8/27/81.]

WAC 296-78-71019 Exhaust systems. (1) Air requirements in buildings, where persons are habitually employed, shall meet the requirements of the general occupational health standard, WAC 296-62-100 through 296-62-11013.

(2) Where the natural ventilation is not sufficient to remove dust, fumes or vapors that create or constitute a hazard, additional means of removal shall be provided.

(3) All mills containing one or more machines whose operations create dust, shavings, chips or slivers during a period of time equal to or greater than one-fourth of the working day or shift, shall be equipped with a collecting system either continuous or automatic in action and of sufficient strength and capacity to thoroughly remove such refuse from the points of operation of the machines and the work areas.

(4) Each woodworking machine that creates dust, shavings, chips, or slivers shall be equipped with an exhaust or conveyor system located and adjusted to remove the maximum amount of refuse from the point of operation and immediate vicinity.

(5) Blower, collecting and exhaust systems shall be designed, constructed and maintained in accordance with American National Standards Z33.1 - 1961 (for the installation of blower and exhaust systems for dust, stock and vapor removal or conveying) and Z12.2 - 1962 (R1969) (code for the prevention of dust explosions in woodworking and wood flour manufacturing plants).

(6) Fans used for ventilating shall be of ample capacity, as evidenced by the performance schedules of the manufacturers, and shall be guarded when exposed to contact. Hoods, dust conveyors, dust collectors and other accessory equipment shall be large enough to insure free intake and discharge.

(7) The outlet or discharge of all ventilating equipment shall be so arranged that at no time will the dust, vapors, gases or other air borne impurities discharged, create or constitute a hazard.

(8) Where a hood is used to form a part or all of the guard required on a given machine, it shall be constructed of not less than ten U.S. gauge sheet metal, or if of cast iron it shall be not less than three-sixteenths inches in thickness.

(9) All exhaust pipes shall be of such construction and internal dimensions as to minimize the possibility of clogging. They shall be readily accessible for cleaning.

(10) All exhaust pipes shall empty into settling or dust chambers which shall effectively prevent the dust or refuse from entering any work area. Such settling or dust chambers shall be so designed and operated as to reduce to a minimum the danger of fire or dust explosions.

(11) In lieu of a general ventilating system, exhaust or blower units may be installed on the dust or fume producing machine, provided the required protection is secured thereby.

(12) When proper ventilation is not provided, and temporary hazardous conditions are therefore encountered, the employer shall furnish approved respiratory and visual equipment: Provided, however, That the exposure to such hazard shall not be for more than two hours duration. Protective measures and equipment shall meet the requirements of the general occupational health standard, chapter 296-62 WAC, Part E and the requirements of the general safety and health standard, WAC 296-24-081 through 296-24-08113.

(13) Provisions for the daily removal of refuse shall be made in all operations not required to have an exhaust system, or having refuse too heavy, or bulky, or otherwise unsuitable to be handled by an exhaust system.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-78-71019, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71019, filed 8/27/81.]

Chapter 296-79 WAC

SAFETY STANDARDS FOR PULP, PAPER, AND PAPERBOARD MILLS AND CONVERTERS

WAC

296-79-010	Scope and application.
296-79-011	Definitions.
296-79-020	General requirements.
296-79-030	Guards and guarding.
296-79-040	Fire protection, ignition sources and means of egress.
296-79-050	Personal protection clothing and equipment.
296-79-060	Repealed.
296-79-070	Illumination.
296-79-080	Elevators, manlifts and other lifting devices.
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296-79-150	Powered industrial trucks and other equipment.
296-79-160	Requirements for cranes and hoists—See general safety and health standards (chapter 296-24 WAC, Part D).
296-79-170	Requirements for crawler and truck cranes.
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296-79-240	Storage of fuel, oil, flammables and chemicals.
296-79-250	Safety procedure for handling sulfur.
296-79-255	Repealed.
296-79-260	Pulpwood storage and handling.
296-79-270	Pulpwood preparation.
296-79-27001	Repealed.
296-79-27003	Log hauls, slips, and carriages.
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296-79-27009	Slasher saws-tables.
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296-79-27015	Construction and use of pulpwood splitters.
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296-79-29007	Bleach plant.
296-79-29009	Audible alarm in bleach plant.

296-79-29011	Pocket grinder doors.
296-79-29013	Pulping device procedures.
296-79-29015	Off machine repulping devices.
296-79-29017	Pulping device cleaning, inspection and repairing.
296-79-29019	Repealed.
296-79-29021	Shredders and blowers.
296-79-29023	Clearing shredder jams.
296-79-29025	Repealed.
296-79-29027	Guillotine type roll splitters.
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296-79-29031	Industrial kiln guns and ammunition.
296-79-29033	Chlorine dioxide system.
296-79-29035	Piling and unpling pulp.
296-79-29037	Chocking rolls.
296-79-300	Machine room equipment and procedures.
296-79-310	Converting operations (bag and container manufacturing, printing, coating, finishing and related processes).
296-79-31001	General requirements for converting operations (bag and container manufacturing, printing, coating, finishing and related processes).
296-79-31003	Corrugator.
296-79-31005	Repealed.
296-79-31007	Repealed.
296-79-31009	Die cutting.
296-79-31011	Repealed.
296-79-31013	Repealed.
296-79-320	Sulfite recovery furnace area requirements.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-79-060	Protection from radiation. [Order 74-24, § 296-79-060, filed 5/6/74; Order 70-6, § 296-79-060, filed 7/10/70, effective 8/10/70.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-255	Safety procedure for handling liquid sulfur. [Order 74-24, § 296-79-255, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-27001	Barkers, chippers, and hog feed devices. [Order 74-24, § 296-79-27001, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-29019	Guarding hand knives and sharpening steels. [Order 74-24, § 296-79-29019, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-29025	Repairing shredders. [Order 74-24, § 296-79-29025, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31005	Adhesive system. [Order 74-24, § 296-79-31005, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31007	Printing and cutting. [Order 74-24, § 296-79-31007, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31011	Power lifts on gluers, tapers and stitchers. [Order 74-24, § 296-79-31011, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31013	Strapping-banding operations. [Order 74-24, § 296-79-31013, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-79-010 Scope and application. (1) This chapter applies to establishments, firms, persons and corporations that manufacture, process, store, finish, or convert pulp, paper or paperboard and includes all buildings, machinery, and equipment.

(2) This chapter shall augment the Washington state general safety and health standards (chapter 296-24 WAC) and general occupational health standards (chapter 296-62 WAC). In the event of any conflict between any portion of

this chapter and any portion of any of the general application standards, the provisions of this chapter 296-79 WAC, shall prevail.

(3) The rules contained in this chapter are minimum requirements and the use of additional guards, or other means, methods or procedures may be needed to make the work or place of work safe.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-010, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-010, filed 5/6/74; Order 70-6, § 296-79-010, filed 7/10/70, effective 8/10/70.]

WAC 296-79-011 Definitions. "Authorized" - One who is qualified by reason of training and to whom the responsibility to perform a specific assignment has been given by the employer.

"Guarded" - The means to remove the likelihood of approach or contact by persons or objects to a point of danger.

"Knowledgeable" - The demonstrated ability to communicate the safe work practices required to perform a job or task correctly.

"Qualified" - One who is familiar with the construction and operation of the equipment and the duties of the position they may be filling. This includes being aware of the hazards of the job and the means and procedures necessary to eliminate or control those hazards.

"Training" - The procedure that must establish and document the employee's competency in the work practices that they are required to perform.

"Shall" or "must" as used in this standard mean the requirement is compulsory.

"May" or "should" as used in this standard identify recommendations or suggestions only.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-011, filed 8/3/99, effective 11/3/99.]

WAC 296-79-020 General requirements. (1) House-keeping.

(a) Floors must be kept reasonably clear of spilled or leaking oil, grease, water, broke, etc., that may cause slipping, tripping or falling. Nonskid type surfacing must be installed in vehicular or pedestrian traffic areas where slipping hazards otherwise would exist.

In areas where it is not possible to keep the floor free of materials which cause a slipping hazard, mats, cleats, or other suitable materials which will effectively minimize or eliminate the hazard must be installed.

(b) Hoses, cords, slings or similar items or equipment must be stored in such a manner that they will not create a hazard.

(2) Storage and transportation of materials. Materials, objects or equipment must be stored or transported by methods which will prevent them from falling, tipping or rolling.

(3) Warning of open manholes or excavations. Open manholes or excavations must be:

- Roped off, barricaded, or adequately safeguarded when located in or adjacent to walkways, aiseways, or roadways.

- Provided with warning lights or lanterns during periods of darkness or reduced visibility.

(4) Training. Employees must receive proper instruction and be familiar with safe operating procedures:

(a) Before they supervise the operation, or make adjustments to any machine or equipment.

(b) To be able to cope with emergencies arising from breaks, ruptures, or spills which would create a hazardous condition.

(c) For lifting and moving objects. Mechanical devices should be used or employees should ask for assistance in lifting or moving heavy objects.

(d) On prompt reporting of any faulty equipment or hazardous condition to the person in charge.

(5) Working alone. When an employee is assigned to work alone in a remote or isolated area, procedures must be developed to ensure:

- That the employee reports by use of radio or telephone to someone periodically; or

- At reasonable intervals a designated person must check on the employee; and

- All persons involved in working alone are advised of the procedures to be followed.

(6) Exits from hazardous areas. Where physically and reasonably possible, there must be at least two unobstructed exits from any hazardous area. Such exits should be on opposite walls.

(7) Safe work area. Sufficient clearance must be maintained between machines to allow employees a safe work area.

(8) Protection from overhead hazard. Warning signs/devices must be:

- Placed in conspicuous locations below areas where overhead work is being done and

- Removed promptly when work is completed and the overhead hazard no longer exists.

(9) Welding areas protected.

(a) Areas in which welding is being done must be screened or barricaded to protect persons from flash burns, when practical.

(b) If the welding process cannot be isolated, all persons who may be exposed to the hazard of arc flash must be properly protected.

(10) Testing safety devices. Brakes, back stops, anti-run-away devices, overload releases, emergency stops, and other safety devices must be inspected and tested frequently to ensure that all are operative and maintained in good repair.

(11) Starting and stopping devices.

- Electrically or manually operated power starting or stopping devices must be provided within easy reach of the operator from the normal operating position.

- If necessary for safety of the operation, the machine must be so equipped that retarding or braking action can be applied at the time of or after the source of power is deactivated.

(12) Interlocks:

Interlocks that affect the safety of employees must not be bypassed except where the employer demonstrates that alternate procedures or devices provide a level of safety for employees equivalent to that provided by the safety interlock. Interlocks are considered to be bypassed anytime the designed control strategy is bypassed by means including, but

not limited to, a temporary wiring change, physical interference or a temporary software change of "force."

Prior to bypassing a safety interlock the employer must:

- Develop a written procedure detailing how the bypass will be accomplished and the alternate means of protecting employees.

- Inform affected employees of all pertinent information including at a minimum the reason for the change, the date of the change, who is responsible for the change, and approximately how long the change will be in effect.

- Post appropriate warning of the change on the equipment or area.

(13) Designing control systems. Employers must ensure that all control systems are designed to:

- Ensure that the system does not create an unsafe state that endangers personnel.

- Ensure that when control systems fail, the equipment being controlled fails to a safe state.

- Have an independent method to safely stop the process or equipment, such as a hardwired emergency stop button or other controls that deenergize the system, or independent methods to force the system to a safe state.

(14) Compressed air.

(a) Compressed air must not be used for cleaning clothing that is being worn, or if it will endanger persons in the area.

(b) Sections of high pressure air hoses must be properly coupled and have safety chains or equivalent safety device attached between the sections (30 psi or more is high pressure air).

(15) Punch bars. Open pipes must not be used as punch bars if the use would create a hazard.

(16) Saw table limit stop or extension. Employees must be protected from contact with the front edge of a circular saw by:

- A limit stop which will prevent the forward swing of the cutting edge from extending beyond the edge of the table or

- Installation of a table extension.

(17) Powder-actuated tools.

- Powder-actuated tool design, construction, operation and use shall comply with all requirements specified in "safety requirements for powder actuated fastening systems," (see chapter 296-24 WAC, Part H-1).

- A careful check must be made to ensure that no cartridges or charges are left where they could enter equipment or be accidentally discharged in any area where they could create a fire or explosion hazard.

(18) Ladders required on waterfront docks. Employers must ensure that either permanent ladders or portable ladders:

- Are readily available for emergency use on all waterfront docks.

- Extend from the face of the dock to the water line at its lowest elevation.

- Are installed at intervals not to exceed 400 feet.

- Are noticeable by painting the dock area immediately adjacent to the ladder with a bright color which contrasts with the surrounding area.

- Have been secured with a suitable method.

Note: When working on or around water also see chapter 296-24 WAC, Part A-2.

(19) Prevent overhang while removing materials. Extreme care must be taken to prevent material from creating an overhang while removing the materials from piles or bins.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-020, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-79-020, filed 6/11/82; Order 77-12, § 296-79-020, filed 7/11/77; Order 74-24, § 296-79-020, filed 5/6/74; Order 70-6, § 296-79-020, filed 7/10/70, effective 8/10/70.]

WAC 296-79-030 Guards and guarding. For additional guarding requirements see chapter 296-24 WAC, Part C.

(1) Safeguarding specific areas, machines or conditions. Certain equipment, tools, machines, and areas present definite hazards and must be safeguarded by compliance with the following requirements:

(a) Broke shredders. Cutting heads must be completely enclosed except for opening at feed side sufficient only to permit entry of stock. The enclosure must be:

- Bolted or locked in place, and
- Of solid material or with mesh or other openings not exceeding 1/2 inch.

(b) Stitching or sewing machine. Carton or bag stitching machines must be properly safeguarded to prevent persons from coming in contact with the stitching head and other pinch or nip points.

(c) Beaters and pulpers.

(i) A guardrail of standard height must be installed when the top edge of vessels or tubs is less than standard height guardrails above the floor or operator's platform. If necessary for the protection of the person feeding equipment, an intermediate guardrail or other suitable protection shall be installed.

(ii) Beater rolls must be provided with covers.

(d) First dryer. A permanent guard or apron guard, or both, must be installed to protect workers from any exposed ingoing nip of the first dryer drum in each section if the area is accessible to workers while the dryer is in operation.

(e) Floor and drain openings. Floor and drain openings in walkways and general work areas must be covered with material or gratings with openings no larger than 2" in the narrow dimension.

(f) Mechanical devices to dump chip cars, trucks or trailers.

• When using mechanical equipment to elevate the front end of the chip containers for dumping into a hopper, the shear area between the floor and the elevated section must be safeguarded.

• The pit area must be adequately safeguarded or barricaded.

• Safeguards must be installed around the exposed sides of a chip hopper.

(2) Replacing guards. All permanent guards must be replaced or adequate temporary safeguards provided before a machine is put into operation.

(3) Protection from moving materials. When material, such as chunks, slivers, cants, or logs, could be thrown or flipped by a saw, barker, or other machines, adequate barri-

ades, screens, netting, or other safeguards must be provided and maintained.

(4) Protection for areas where guards are impractical. When normal guarding is impractical:

- The hazard must be reduced to a minimum by use of safety chains, lifelines, signs or other reasonable means, and
- Areas which present a hazard which cannot be reasonably safeguarded must be identified by use of paint or other materials.

(5) Knives and scissors.

(a) Knives used for chip or hog fuel machines, or guillotine cutters, must be secured in properly constructed containers during transportation.

(b) Workers must be furnished properly designed and constructed sheaths for safely carrying knives and scissors used for cutting or trimming pulp and paper.

(c) Tables where paper is being cut must be equipped with sheaths or shelves for safe storage of knives and scissors.

(d) Sharp edged slitter knives subject to accidental contact must be effectively guarded. Carriers must be provided and used when transporting or carrying sharp edged slitter knives.

(e) Hand knives and sharpening steels used in paper preparation, must be provided with guards at the junction of the handle and the blade. Utility knives with blade exposure two and one-half inches or less are exempted from this requirement.

(6) Safeguard for foot operated treadle switch used to activate power driven equipment. Foot operated treadle switches used for activation of power driven equipment must be protected by a stirrup type guard or equivalent protection must be provided to prevent accidental activation.

(7) Automatic pressure actuated stopping devices. Hand fed machines and other moving equipment which create shear or pinch points which cannot be reasonably guarded may be safeguarded by the installation of pressure activated bars or sensing devices which, when contacted, will automatically stop the machine or equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-030, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-030, filed 5/6/74; Order 70-6, § 296-79-030, filed 7/10/70, effective 8/10/70.]

WAC 296-79-040 Fire protection, ignition sources and means of egress. For fire protection, ignition source, and means of egress requirements see chapter 296-24 WAC, Part G-1, G-2 and G-3.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-040, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-040, filed 5/6/74; Order 70-6, § 296-79-040, filed 7/10/70, effective 8/10/70.]

WAC 296-79-050 Personal protection clothing and equipment. See chapter 296-24 WAC, Part A-2, for additional personal protective equipment requirements.

(1) Rings or other jewelry that could create a hazard should not be worn by employees while in the performance of their work.

(2) Protective footwear.

- Employees who work in areas where there is a possibility of foot injury due to falling or rolling objects must wear safety type footwear.

- Employers will supply shoe guards and toe protectors.
- Employers must also make safety shoes available for purchase by employees at not more than actual cost to the employer.

(3) Calks or other suitable footwear that will afford reasonable protection from slipping must be:

- Worn while working on logs.
- Made available at not more than actual cost to the employer.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-050, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-79-050, filed 9/30/94, effective 11/20/94; 89-11-035 (Order 89-03), § 296-79-050, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-79-050, filed 11/30/83; 82-13-045 (Order 82-22), § 296-79-050, filed 6/11/82; Order 74-24, § 296-79-050, filed 5/6/74; Order 70-6, § 296-79-050, filed 7/10/70, effective 8/10/70.]

WAC 296-79-060 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-070 Illumination. (1) Illumination required. Lighting that is adequately adjusted to provide a margin of safety for all work tasks must be provided and maintained.

(a) The minimum level of task lighting for all indoor activities must be an average of ten-foot candles measured thirty inches above the floor or at the task.

(b) The minimum level of task lighting for all outdoor activities must be an average of five-foot candles measured thirty inches above the working surface or at the task.

(2) If general lighting is not provided throughout the work area, the employer must provide illumination which is adequately adjusted to provide visibility of nearby objects that might be potential hazards or to see to operate emergency control or other equipment. The minimum level of nontask lighting for all indoor and outdoor activities must be an average of three-foot candles measured thirty inches above the floor or working surface.

Note: This section establishes minimal levels of illumination for safety purposes only. Guidelines pertaining to optimal levels of lighting and illumination may be found in practice for Industrial Lighting, ANSI/IES RP7-1979. The minimum levels specified in subsections (1) and (2) of this section represent averages with the lowest level in an area to be no less than fifty percent of the indicated value.

(3) Emergency or secondary lighting system required.

(a) There must be an emergency or secondary lighting system that can be actuated immediately upon failure of the normal power supply system. The emergency or secondary lighting system must provide illumination in the following areas:

- Wherever it is necessary for workers to remain at their machine or station to shut down equipment in case of power failure.
- At stairways and passageways or aiseways used by workers as an emergency exit in case of power failure.

(b) Emergency lighting facilities must be checked at least every 30 days for mechanical defects. Defective equipment must be given priority for repair schedule.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-070, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-070, filed 5/6/74; Order 70-6, § 296-79-070, filed 7/10/70, effective 8/10/70.]

WAC 296-79-080 Elevators, manlifts and other lifting devices. (1) All elevators, manlifts or other lifting devices must be installed and maintained in conformity with the requirements specified in the Washington state elevator laws and regulations adopted by the elevator section of the department of labor and industries.

(2) Inspection of elevators, etc., for acid towers.

(a) Outside elevators must be inspected daily during winter months when ice materially affects safety.

(b) Elevators, runways, stairs, etc., for acid towers must be inspected monthly for defects that may occur because of exposure to acid or corrosive gases.

(3) Respirators on elevators. Elevators located in areas where exposure to potentially harmful concentrations of toxic substances may occur must be equipped with an adequate supply of respirators to protect the maximum number of passengers.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-080, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-080, filed 5/6/74; Order 70-6, § 296-79-080, filed 7/10/70, effective 8/10/70.]

WAC 296-79-090 Electrical equipment and distribution. All electrical installations and electrical utilization equipment must comply with chapter 296-24 WAC, Part L.

(1) Operator controlled devices. Push buttons, selector switches, remote control switches, automatic circuit activating devices, and other control circuit type devices must be marked to indicate their function and the equipment they control.

(2) Posting equipment automatically activated or remotely controlled. If it will create a hazard to personnel, equipment which is automatically activated or remotely controlled must be posted, warning persons that machine may start automatically.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-090, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-79-090, filed 11/22/91, effective 12/24/91; Order 74-24, § 296-79-090, filed 5/6/74; Order 70-6, § 296-79-090, filed 7/10/70, effective 8/10/70.]

WAC 296-79-100 Floors, platforms, stairways, ladders, loading docks. See chapter 296-24 WAC, Part J.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-100, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-100, filed 5/6/74; Order 70-6, § 296-79-100, filed 7/10/70, effective 8/10/70.]

WAC 296-79-110 Elevated runways and ramps used by vehicles. (1) Runways and ramps must:

(a) Be cleated, grooved, rough surfaced, or covered with a material that will minimize the danger of skidding.

(b) Not have a maximum incline exceeding 20° from horizontal if used for wheeled equipment.

(2) Guarding exposed sides.

- Elevated ramps or runways used for the travel of wheeled equipment must have exposed sides guarded with a substantial bull rail or shear rail of sufficient height to prevent wheeled equipment from going over the rail.

- If elevated ramps or runways are used by pedestrians, standard guardrails must be installed on runways wherever the height exceeds 4 feet above the adjacent area except where used for loading or unloading purposes.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-110, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-110, filed 5/6/74; Order 70-6, § 296-79-110, filed 7/10/70, effective 8/10/70.]

WAC 296-79-120 Scaffolds, construction, use and maintenance. See General safety and health standards, chapter 296-24 WAC, Part J-1 or Safety standards for construction work, chapter 296-155 WAC, Part J-1.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-120, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-120, filed 5/6/74; Order 70-6, § 296-79-120, filed 7/10/70, effective 8/10/70.]

WAC 296-79-130 Crossovers, aisles, passages. See chapter 296-24 WAC, Part D, for additional requirements for aisles and passages.

(1) Clearances to be marked. Low clearance areas under conveyors which could present a hazard to mobile equipment operations must be identified by a suitable means, such as signs, contrasting colors, or tell-tales.

(2) Crossovers over obstructions in passageways. Crossovers must be provided where employees are required to cross over transmission drive lines or other permanent obstructions in passageways or walkways.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-130, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-130, filed 5/6/74; Order 70-6, § 296-79-130, filed 7/10/70, effective 8/10/70.]

WAC 296-79-140 Installation, inspection, and maintenance of pipes, piping systems, and hoses. (1) Definitions applicable to this section.

"Hazardous material system" - any system within the following classifications:

- Flammable or explosive - any system containing materials which are hazardous because they are easily ignited and create a fire or explosion hazard, defined by NFPA as Class I liquids;

- Chemically active or toxic - any system containing material which offers corrosion or toxic hazard in itself or can be productive of harmful gases upon release, defined by NFPA 704M as Class 3 and 4 materials;

- Thermally hazardous - any system above 130°F which exposes persons to potential thermal burns;

- Pressurized - any gaseous system above 200 psig or liquid system above 500 psig.

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"Piping system" - any fixed piping, either rigid pipe or flexible hose, including all fittings and valves, in either permanent or temporary application.

(2) Design and installation. All new piping systems intended to be used in hazardous material service must be designed and installed in accordance with applicable provisions of the ASME Code for Pressure Piping or in accordance with applicable provisions of ANSI B31.1-1995 through B31.8-1995.

(3) Inspection and maintenance.

(a) The employer must develop a formal program of installation inspections and maintenance for all hazardous material piping systems. The program must be:

- Based on sound maintenance engineering principle, and

- Demonstrate due consideration for the manufacturing specifications of the pipe, hose, valves and fittings, the ambient environment of the installation and the corrosive or abrasive effect of the material handled within the system.

(b) Type and frequency of tests and/or inspections and selection of inspection sites must be adequate to give indications that minimum safe design operating tolerances are maintained. The tests may include visual or nondestructive methods.

(4) Inspection records.

(a) Results of inspections and/or tests must be maintained as a record for each system. Portions of systems that are buried or enclosed in permanent structures in such a manner as to prevent exposure to employees even in the event of a failure, may be exempted from the inspection requirements only.

- Past records may be discarded provided the current inspection report and the immediately preceding two reports are maintained.

- When a system is replaced, a new record must be established and all past records may be discarded.

(b) Upon request the records for each system must be made available for review by the department of labor and industries.

(5) Systems or sections of systems found to be below the minimum design criteria requirements for the current service must be repaired or replaced with component parts and methods which equal the requirements for new installations.

(6) Identification of piping systems.

(a) Pipes containing hazardous materials must be identified. It is recommended that USAS A13.1 "Scheme for Identification of Piping Systems" be followed.

Positive identification of a piping system content:

- Must have a lettered legend giving the name of the content in full or abbreviated form, or a commonly used identification system.

- Must be made and maintained at suitable intervals and at valves, fittings, and on both sides of walls or floors as needed.

- May have arrows to indicate the direction of flow.

- May provide necessary supplementary information such as hazard of use. This may be done by additional legend or by color applied to the entire piping system or as colored bands. Legends may be placed on colored bands.

Examples of legend which may give both positive identification and supplementary information regarding hazards or use are:

Ammonia	Hazardous liquid or gas
Chlorine	Hazardous liquid or gas
Chlorine dioxide	Hazardous liquid or gas
Sulphur dioxide	Hazardous gas
Liquid caustic	Hazardous liquid
Liquid sulphur	Hazardous liquid
Sulphuric acid	Hazardous liquid
Sodium chlorate	When dry, danger of fire or explosion

Note: Manual L-1, published by Chemical Manufacturers Association, Inc., is a valuable guide in respect to supplementary legend.

• When color, applied to the entire piping system or as colored bands, is used to give supplementary information it should conform to the following:

CLASSIFICATION	PREDOMINANT COLOR
F--Fire-protection equipment	Red
D--Dangerous materials	Yellow (or orange)
S--Safe materials	Green (or the achromatic colors, white, black, gray or aluminum)

and, when required,

P--Protective materials	Bright blue
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(b) When legend systems are used, legend boards showing the color and identification scheme in use must be prominently displayed at each plant. They must be located so that employees who may be exposed to hazardous material piping systems will have a frequent reminder of the identification program.

(c) All employees who work in the area of hazardous material piping systems must be given training in the color and identification scheme in use.

(7) Steam hoses. Steam hoses must be specifically designed to safely carry steam at any pressures to which they may be subjected.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-140, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-79-140, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-140, filed 1/8/81; Order 74-24, § 296-79-140, filed 5/6/74; Order 70-6, § 296-79-140, filed 7/10/70, effective 8/10/70.]

WAC 296-79-150 Powered industrial trucks and other equipment. Additional requirements on mobile equipment and lift trucks are in chapter 296-24 WAC, Part D.

(1) The operator of a power-driven vehicle must test the brakes, steering gear, lights, horns, warning devices, clutches, etc., before operating vehicle.

(2) Control levers of lift trucks, front end loaders, or similar types of equipment must not be operated except when the operator is in the proper operating position.

(3) No person may be permitted to ride on a powered hand truck unless it is so designed by the manufacturer. A limit switch must be on the operating handle—30 degrees each way from a 45-degree angle up and down.

(4) Employees must not work below the raised bed of a dump truck, raised buckets of front end loaders, raised blades of tractors or in similar positions without blocking the equipment in a manner that will prevent it from falling.

(5) Reporting suspected defects. If, in the opinion of the operator, a power-driven vehicle is unsafe, the operator must report the suspected defect immediately to the person in charge. Any defect that would make the vehicle unsafe to operate under existing conditions will be cause to take the vehicle out of service and it must not be put back into use until it has been made safe.

(6) Vehicle operators must have a reasonably unobstructed view of the direction of travel, or, where this is not possible, the operator must be directed by a person or by a safe guidance means or device. Where practical, mirrors must be installed at blind corners or intersections that will allow operators to observe oncoming traffic.

(7) Vehicles in congested areas must operate with a warning light.

(8) Passengers must not be permitted to ride with legs or arms extending outside any vehicle nor must they be permitted to ride unless a passenger seat or other protective device is provided.

(9) Guard on operator's platform. Every power truck operated from an end platform or standing position must be:

- Equipped with a platform extending beyond the operator's position, and
- Strong enough to withstand a compression load equal to the weight of the loaded vehicle applied along the longitudinal axis of the truck with the outermost projection of the platform against the flat vertical surface.

(10) Cleaning vehicles. All vehicles must be kept free of excessive accumulations of dust and grease that may present a hazard.

(11) Vehicles must be controlled manually while being pushed or towed except when a tow bar is used. Pushing of vehicles or railroad cars with the forks or clamps of a lift truck is prohibited.

(12) Aisles or passageways should be at least three feet wider than the widest vehicle or load traveling the aisle or passageway. When this clearance cannot be maintained, adequate precautions must be taken.

(13) The forks, clamps, or attachments of lift trucks must be kept as low as possible while the vehicle is moving.

(14) The hoisting of personnel by lift trucks must meet the requirements in WAC 296-24-230.

(15) Exhaust systems on lift trucks and jitneys shall be constructed to discharge either within 20 inches from the floor or 84 inches or more above the floor.

(16) Mobile equipment with an enclosed cab must be provided with an escape hatch or other method of exit in case the regular exit cannot be used.

(17) Suitable methods must be used or devices installed which will prevent the trailer from tipping while being loaded or unloaded.

(18) Whenever vehicles using LP gas as a fuel are parked overnight or stored for extended periods of time indoors, with the fuel container in place, the service valve of the fuel container must be closed.

(19) The use of spinners on steering wheels must be prohibited unless an anti-kick device is installed or the equipment has a hydraulic steering system.

(20) Rolls transported with a grab or clamp attachment must be carried with the core in a vertical position.

(21) When traveling empty with a grab or clamp attachment, the jaws or blades of those attachments must remain within the running lines of the lift truck.

(22) When transporting two or more rolls with a roll grab attachment, the bottom roll will have at least sixty percent of the grab attachment on it.

(23) When transporting two or more rolls or bales with a grab or clamp attachment, there must be no rolls or bales unsecured if there is risk of part or all of the load shifting or falling.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-150, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-150, filed 5/6/74; Order 70-6, § 296-79-150, filed 7/10/70, effective 8/10/70.]

WAC 296-79-160 Requirements for cranes and hoists—See general safety and health standards (chapter 296-24 WAC, Part D). Grounding - Where conditions such as corrosive atmospheres, dirt, paint, rust, or other insulating materials prevent reliable metal-to-metal contact for grounding (bridge, wheel and its respective tracks), a separate ground conductor must be provided.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-160, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-160, filed 5/6/74; Order 70-6, § 296-79-160, filed 7/10/70, effective 8/10/70.]

WAC 296-79-170 Requirements for crawler and truck cranes. (1) Boom length indicated. The length must be plainly marked on each boom section of a mobile crane having a sectioned boom.

(2) Radius or boom angle indicator. A radius or boom angle indicator must be installed where it is readily visible to the operator's normal operating position on all cranes having a movable working boom.

(3) Safety device for light fixtures. Any light fixtures attached to crane boom or machinery house must have a safety strap or other device attached which will prevent the fixture from falling.

(4) Boom stops. Boom stops must be:

- Installed to govern the upward travel of the boom to a safe limit.
- Of adequate strength to prevent the boom from traveling past the vertical position.

(5) Controls marked. Crane operating controls must be marked or an explanation of the controls' functions must be posted in full view of the operator.

(6) Locking hydraulic outriggers. Hydraulic outriggers must be:

- Equipped with a pilot operated check valve or

- Installed with a mechanical lock which will prevent outriggers from retracting in case of failure of the hydraulic system.

(7) Top of boom painted. The top six feet of the boom or jib must be painted bright yellow or other bright contrasting color if the boom is yellow.

(8) Warning devices. All cranes must be equipped with a suitable warning device such as a horn or whistle.

(9) Hook safety device. All hooks must be equipped with a safety device or other effective means must be used to prevent accidental unhooking of the load.

(10) Counterweight limited. The amount of crane counterweight must not exceed the maximum amount specified by the crane manufacturer.

(11) Use proper size wire rope for sheaves. The size and diameter of sheaves and wire rope must be compatible and follow the recommendations by the manufacturer, published by the Wire Rope Institute or other acceptable engineering practices.

(12) Loading or unloading gear. Unloading gear such as grapples, tongs, and buckets, must not be left suspended when not in use or whenever the machine is unattended.

(13) No one under load. Personnel must not position themselves under crane loads and such loads must not be carried over workers.

(14) Operating clearance from stationary objects. Where the area is accessible to workers:

- A distance of 30 inches must be maintained between the outermost part of a revolving crane and any stationary object within the swing radius of the crane or

- The hazardous area must be temporarily guarded or barricaded.

(15) See WAC 296-24-960 when working around energized lines.

(16) Operators must avoid contacting overhead obstructions which may damage the boom or adversely affect stability. In instances where the operator may have difficulty in observing clearances, a signal person must be stationed where they can observe clearances and signal the operator.

(17) Safe travel across thoroughfares or railroad tracks.

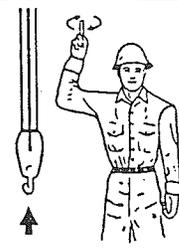
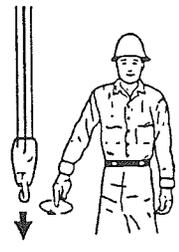
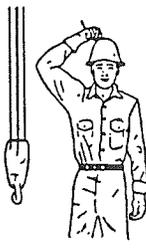
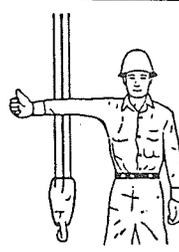
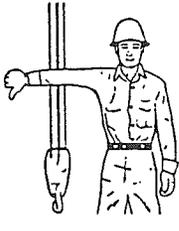
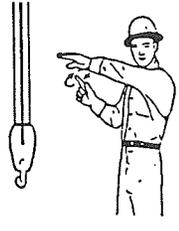
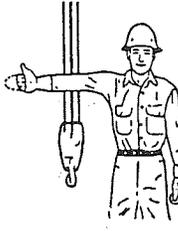
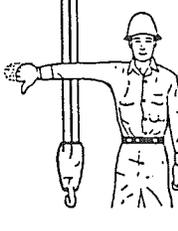
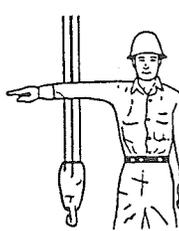
- When moving cranes, shovels or similar types of equipment across thoroughfares or railroad tracks and the operator does not have a clear vision of approaching traffic, a flagperson must be used.

- The flag person must be stationed where the equipment operator can be signaled and other traffic can be controlled.

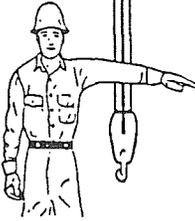
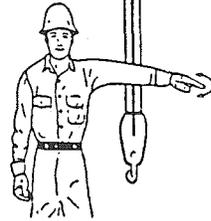
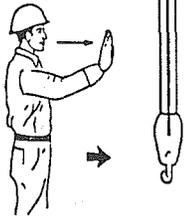
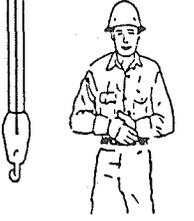
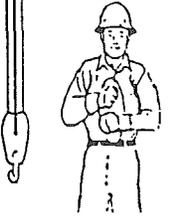
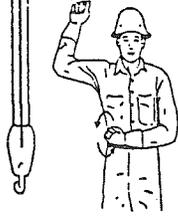
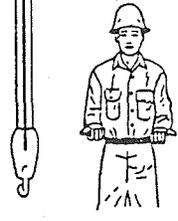
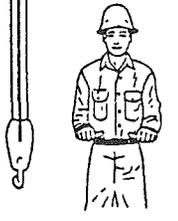
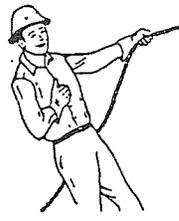
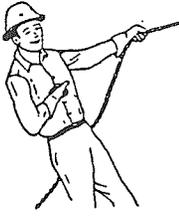
(18) Only a designated member of the crew may give signals to the crane operator. Exception: Anyone may give an emergency stop signal.

(19) Standard hand signals. When using visual signals, standard hand signals as illustrated, must be used for directing crane operators.

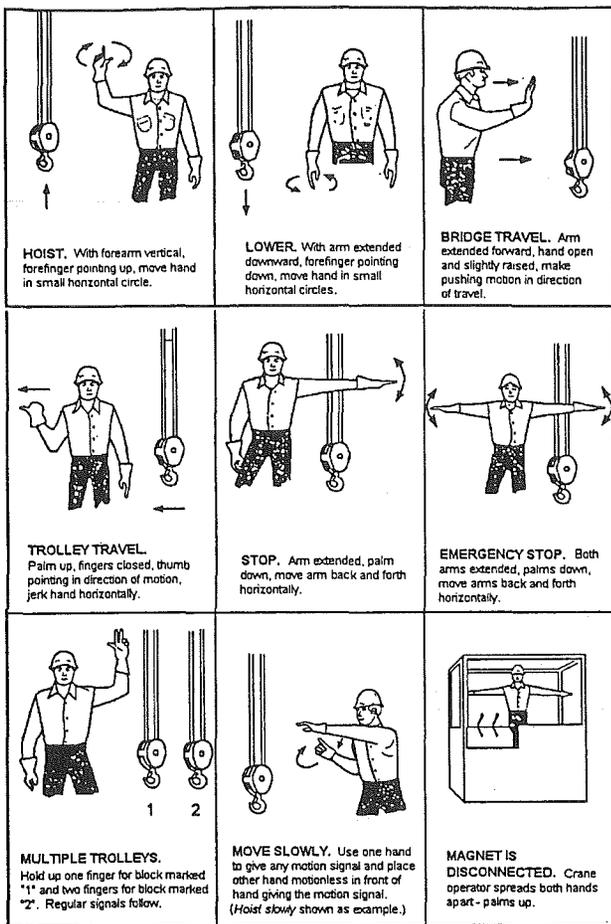
**CRAWLER, LOCOMOTIVE, AND TRUCK CRANES
STANDARD HAND SIGNALS FOR CRANES**

 <p>HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	 <p>LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circles.</p>	 <p>USE MAIN HOIST. Tap fist on head; then use regular signals</p>	 <p>USE WHIPLINE. (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.</p>	 <p>RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.</p>
 <p>LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.</p>	 <p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)</p>	 <p>RAISE THE BOOM AND LOWER THE LOAD. With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.</p>	 <p>LOWER THE BOOM AND RAISE THE LOAD. With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</p>	 <p>SWING. Arm extended, point with finger in direction of swing of boom.</p>

CRAWLER, LOCOMOTIVE, AND TRUCK CRANES (Cont.)

 <p>STOP. Arm extended, palm down, hold position rigidly.</p>	 <p>EMERGENCY STOP. Arm extended, palm down, move hand rapidly right and left.</p>	 <p>TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.</p>	 <p>DOG EVERYTHING. Clasp hands in front of body.</p>	 <p>TRAVEL (Both Tracks). Use both fists in front of body, making a circular motion about each other, indicating direction of travel; forward or backward. (For crawler cranes only.)</p>
 <p>TRAVEL (One Track). Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For crawler cranes only.)</p>	 <p>EXTEND BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing outward.</p>	 <p>RETRACT BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing toward each other.</p>	 <p>EXTEND BOOM (Telescoping Boom). One Hand Signal. One fist in front of chest with thumb pointing outward.</p>	 <p>RETRACT BOOM (Telescoping Boom). One Hand Signal. One fist in front of chest, thumb pointing outward and heel of fist tapping chest.</p>

STANDARD HAND SIGNALS FOR CONTROLLING OVERHEAD AND GANTRY CRANES



[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-170, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-79-170, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-170, filed 1/8/81; Order 74-24, § 296-79-170, filed 5/6/74; Order 70-6, § 296-79-170, filed 7/10/70, effective 8/10/70.]

WAC 296-79-180 Privately owned standard gauge railroad operations. (1) Blue flag or light for railroad operations.

- A blue signal (blue flag or blue light for nonilluminated areas) must be displayed at one or both ends of an engine, car(s), or train, to indicate that workers are under or about the railway equipment.
- When such warning devices are displayed, the equipment must not be coupled to or moved.
- On a dead end spur, a blue signal may be displayed adjacent to the switch opening while cars are being loaded or unloaded.

(2) Blue signals and derails.

- Work being carried on which subjects employees to the hazard of moving railroad equipment must be protected by blue signals and locked derails set a minimum of 50 feet from one or both ends of the worksite.

- Where the spur track switch is less than 50 feet from the work location, the switch padlocked in the open position will take the place of the derail and the blue signal must be placed at that point.

(3) Signals unobscured. Equipment which would obscure the blue signal must not be placed on the track.

(4) Signals displayed by each maintenance crew. Each maintenance crew must display and remove its own set of blue signals.

(5) Warning device.

- A flashing warning light or other device must be installed near any opening which leads to a passageway crossing railroad tracks adjacent to the building.

- Such light or device must be activated prior to any switching or movement of railroad equipment to warn workers of the dangerous condition in the area.

(6) Cars to be immobilized. Spotted cars must either have brakes set, wheels blocked, or must be coupled to other immobilized cars to prevent each car from rolling.

(7) Crawling under or between coupled cars prohibited. Workers must not crawl under or pass between coupled railroad cars to cross tracks.

(8) Warning at road crossing. An audible whistle, horn or bell must be sounded by the locomotive engineer to give adequate warning prior to switching across any road crossing.

(9) Flying switches. When switching railroad equipment in congested areas or across roadways or walkways "flying switches" must be prohibited.

(10) Car opening devices. All box car doors and associated mechanisms must be carefully inspected before workers attempt to open or close them. If the door is not free and cannot be opened safely by hand, equipment must be provided, where necessary, and a safe method must be used to open or close the door.

(11) Clearance from railroad tracks. Materials must not be stacked or piled closer than 8 1/2' from the center line of a standard gauge railroad track.

(12) Operating under limited visibility conditions.

Unless trains are operated in a manner to allow the operator to see a safe stopping distance in the direction of travel, a flagperson(s) must be positioned in such a manner to safely direct movement of the train.

Flagperson must:

- Remain within sight of the operator, or
- Be equipped to maintain visual or voice communication with the operator as conditions dictate.

(13) A flagperson must direct the movement of trains being moved across main roads or thoroughfares which do not have adequate traffic warning lights, bells or barricades.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-180, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-180, filed 1/8/81; Order 74-24, § 296-79-180, filed 5/6/74; Order 70-6, § 296-79-180, filed 7/10/70, effective 8/10/70.]

WAC 296-79-190 Loading and unloading materials from railway cars or trucks. (1) Safe access to top of railroad cars or trucks. Platforms with ladders or stairways must be installed or made available when needed so that workers may safely gain access to and perform work on the top of rail-

road cars or trucks when ladders are not installed on such equipment.

(2) Nets not to cover ladders. Rolled chip nets must not be positioned where they cover the ladders on railroad cars or trucks.

(3) Tipple type unloading device. When a tipple type unloading device is used for removing chips from cars, the cars must be properly secured in place and all employees must be in the clear before dumping operation is started.

(4) Handling pulp chips and hog fuel from trucks and trailers.

(a) Elevating platform-type or cable-lift type unloading devices must have adequate back bumper stops.

(b) Side rails or other positive means to prevent the trailer from falling must be used while unloading single trailer units.

(c) The truck or tractor must be secured when elevating platform lifts are used to elevate both the tractor and trailer or single unit trucks.

(d) All personnel must be clear of all hoisting or elevating mechanisms before dumping commences.

(e) No person is allowed in any truck while the truck is being elevated.

(5) Taking chip samples. A safe area and suitable device must be provided for the chip tester to use while taking chip samples.

(6) Derail required for hazardous materials. To protect tank cars from being moved while loading or unloading hazardous materials by use of pipes or hoses, a derail and blue flag must be set between the spotted tank cars and any moving railroad equipment.

(7) Moving cars by tugger or powered drums. When rail cars are moved by a tugger or powered drums with cables, a means should be provided or the area barricaded in such a manner that the moving cables do not endanger the workers.

(8) Handling pulpwood from flatcars and all other railway cars.

(a) Railroad flatcars for the conveyance of pulpwood loaded parallel to the length of the car must be equipped with safety-stake pockets.

(b) Where pulpwood is loaded crosswise on a flatcar sufficient stakes of sizes not smaller than 4 by 4 inches must be used to prevent the load from shifting.

(c) Cutting stakes on log bundles. When it is necessary to cut stakes:

- Those on the unloading side should be partially cut through first, and then the binder wires cut on the opposite side.

- Wire cutters equipped with long extension handles must be used.

- No person is permitted along the dumping side of the car after the stakes have been cut.

(d) Cutting bands on log bundles. When cutting bands on bundled logs, workers must:

- Position themselves in a safe location;
- Not use double bitted axes for cutting bands;
- Use caution to prevent being struck by ends of bands being cut and;

- If needed, wear personal protective equipment.

(e) Flatcars and all other cars must be:

- Chocked during unloading and,
- Rail clamping chocks must be used when equipment is not provided with hand brakes.

(9) Handling pulpwood from trucks.

(a) Cutting of stakes and binder wires must be done in accordance with (8)(c) of this section.

(b) Binders or stakes must not be loosened or removed:

- Until the logs are secured and held by equipment which will prevent them from rolling off the truck, or

- Barricades will prevent logs from striking the person removing the binders or stakes.

(c) Where binder chains and crane slings are used:

- The crane slings must be attached and taut before the binder chains are released and,

- The hooker must see that the helper is clear before signaling for the movement of the load.

(d) The truck driver must:

- Leave the truck cab and remain in the clear, preferably in a designated area, and

- Be in clear view of the unloading equipment operator while the unloader is approaching the loaded truck.

- After a complete load is lifted as a unit and held stationary, the truck driver may enter the cab and drive forward from under the suspended load.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-190, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-190, filed 5/6/74; Order 70-6, § 296-79-190, filed 7/10/70, effective 8/10/70.]

WAC 296-79-200 Bridge and dock plates. Properly constructed bridge or dock plates must be furnished and used to bridge the area between a dock and truck or railroad car. The following requirements must be complied with for construction and use of such bridge or dock plates:

(1) Strength. The plate must be capable of supporting three times the maximum load to which it will be subjected.

(2) Stops. The plates must be provided with positive stops to prevent the plates from shifting or moving.

(3) Plates.

- The plates must bear solidly on the dock and on the floor of the car or truck.

- Plates with excessive teeter or rock must be repaired or replaced.

(4) Upturn or lip on plates. The sides of bridge or dock plates must have an upturn or lip of at least 4 inches covering the area between the edge of the loading dock and edge of car or truck floor whenever this distance exceeds 18 inches to prevent wheeled equipment from running off the sides.

(5) Bearing surface. Bridge or dock plates must have at least 6 inches bearing surface on the loading dock.

(6) Suitable fittings to be used. Bridge or dock plates intended to be moved by mechanized equipment must be designed for this purpose or appropriate fittings or attachments must be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-200, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-200, filed 5/6/74; Order 70-6, § 296-79-200, filed 7/10/70, effective 8/10/70.]

WAC 296-79-210 For conveyors, maintenance and inspection. See chapter 296-24 WAC, Part D.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-210, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-210, filed 5/6/74; Order 70-6, § 296-79-210, filed 7/10/70, effective 8/10/70.]

WAC 296-79-220 Deactivating and lockout requirements. (1) Control requirement. Whenever the unexpected startup of machinery, the energizing of electrical circuits, the flow of material in piping systems or the removal of guards would endanger workers, such exposure must be prevented by deactivating and locking out the controls as required by chapter 296-24 WAC, Part A-4.

EXCEPTION: In instances where any machine must be in motion for proper adjustment, for removal or replacement of materials from the machine, for machine clothing changes or for roping up, the following precautions must be observed:

- The machine must be operated at thread or jog speed;
- Extension tools which minimize personnel exposure must be used where possible;
- The operating controls must at all times be under the control of a qualified operator or craftsman;
- All personnel must remain in view of the operator or other means of communication shall be established;
- All personnel must be beyond the reach of other machine section(s) or element(s) which offer potential exposure. In any instance where such potential exposure exists, such other section(s) or element(s) must be separately locked out.

(2) Group lockout or tagout devices. Procedures must meet the minimum requirements of chapter 296-24 WAC, Part A-4. The employer must develop a specific written group lockout or tagout procedure and review it with the local plant labor/management safety committee before it can be utilized.

(3) Temporary or alternate power.

- Whenever possible, temporary or alternate sources of power to the equipment being worked on must be avoided.
- If the use of such power is necessary, all affected employees must be informed and the source of temporary or alternate power must be identified.

(4) Deactivating piping systems.

(a) Nonhazardous systems must be deactivated by at least locking out either the pump or a single valve.

(b) Lockout of the following hazardous material piping systems must isolate to the worksite and must provide protection against backflow where such potential exists:

- Gaseous systems that are operated at more than 200 psig;
 - Systems containing any liquid at more than 500 psig;
 - Systems containing any material at more than 130°F;
 - Any cryogenic system,
 - Systems containing material which is chemically hazardous as defined by NFPA 704 1996 Class 3 and 4;
 - Systems containing material classified as flammable or explosive as defined in NFPA Class I.

Such systems must be deactivated by one of the following:

- Locking out both the pump and one valve between the pump and the worksite;
- Locking out two valves between the hazard source and the worksite;
- Installing and locking out a blank flange between the hazard source and worksite. When a blank flange (blind) is used to separate off portions of hazardous material systems from a portion which is in operation, the employer must develop and implement a procedure for installation and removal of the blank flange that will ensure all hazards have been eliminated;
 - Line breaking between the hazard and the worksite;
 - On hazardous chemical systems where the methods already listed are not feasible, or by themselves create a hazard, single valve closure isolation may be used provided that potentially exposed employees are adequately protected by other means such as personal protective equipment.
 - On all steam systems where the methods already listed are not feasible, single valve closure isolation may be used provided that the system is equipped with valves meeting all requirements of ANSI B16.5-1996 and ANSI B16.34-1996. Where single valve isolation is used, the steamline must also be equipped with a bleed valve downstream from the valve closure to prove isolation of the worksite.

Note: Bleeder valves are recommended behind all primary valve closures on hazardous material systems. Consideration should be given to the nature of the material in the system when installing bleeder valves. To assist in preventing plugging, bleeder valves should generally be installed in the top one-third of the pipe. Short exhaust pipes should be installed on bleeder valves to direct the flow of possible escapement away from the position where an employee would normally be when using the bleeder valve.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-220, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-13-053 (Order 81-9), § 296-79-220, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW, 81-03-007 (Order 80-31), § 296-79-220, filed 1/8/81; Order 76-7, § 296-79-220, filed 3/1/76; Order 74-24, § 296-79-220, filed 5/6/74; Order 70-6, § 296-79-220, filed 7/10/70, effective 8/10/70.]

WAC 296-79-230 Confined spaces. (1) Entry into confined spaces must be in accordance with chapter 296-62 WAC, Part M.

(2) All equipment necessary to perform the work, including safety equipment, must be at the confined space and must be inspected or tested to assure that it functions properly.

(3) Protective equipment that will afford proper protection to the employee from any condition which may arise based on the hazard assessment, must be available either at the entrance or within the confined space.

(4) Electrical circuits leading into confined spaces where electrical conductive hazards exist must be protected by a ground fault interrupter or the voltage must not exceed 24 volts.

(5) Battery operated flashlights or lantern must be readily available for use by persons working in areas where escape would be difficult if normal lighting system should fail. Only explosion-proof type lights may be taken into any atmosphere which may contain an explosive concentration.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-230, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-

230, filed 5/6/74; Order 70-6, § 296-79-230, filed 7/10/70, effective 8/10/70.]

WAC 296-79-240 Storage of fuel, oil, flammables and chemicals. See chapter 296-24 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-240, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-240, filed 3/1/76; Order 74-24, § 296-79-240, filed 5/6/74; Order 70-6, § 296-79-240, filed 7/10/70, effective 8/10/70.]

WAC 296-79-250 Safety procedure for handling sulfur. (1) Sulfur burners. Sulfur-burner houses must:

- Be safely and adequately ventilated, and
- Every precaution taken to guard against dust, explosion hazards and fires, in accordance with American National Standards Z9.2-1979 (R1991).

(2) Handling/storage of dry sulfur.

(a) Nonsparking tools and equipment must be used in handling dry sulfur.

(b) Sulfur storage bins must be kept free of sulfur dust accumulation, and buildings should be designed with explosion relief, in accordance with the latest revision of American National Standard Z9.2-1979 (R1991).

(c) Sulfur-melting equipment must not be located in the burner room.

(3) Handling/storage of liquid sulfur.

(a) Each facility utilizing liquid sulfur must:

- Carefully examine its own handling system and
- Formulate a written procedure for maintenance, receiving, storing and using this product.

(b) A minimum of two trained employees must be assigned when a tank car is first opened in preparation for venting and unloading.

(c) Approved respiratory protective equipment for H2S exposure, chemical splash goggles and gloves must be worn when performing this work.

(d) Spark producing or electric operated tools must not be used to unplug railroad car vents.

(e) Where venting can cause harmful exposure to other unprotected workers in the area:

- A venting system must be installed which adequately contains any gas escapement from a tank car while venting.
- The vented gas must be carried to a safe location for discharge or circulated through a scrubbing system.
- The venting system must be connected before valves which would allow escapement are opened.

(f) Smoking, open burning or welding must be prohibited while unloading is in process or danger of gas escapement exists.

(4) Acid plant - Protection for employees.

(a) Where lime slaking takes place, employees must be provided with rubber boots, rubber gloves, protective aprons, and eye protection. A deluge shower and eyewash must be provided to flush the skin and eyes to counteract lime and acid burns.

(b) Hoops for acid storage tanks must be:

- (i) Made of round rods rather than flat strips, and
- (ii) Regularly inspected and safety maintained.

(c) Sulphur burner ignitors must have a means to automatically shut off the fuel to the ignitor when the flame has been extinguished.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-250, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-79-250, filed 11/22/91, effective 12/24/91; Order 76-7, § 296-79-250, filed 3/1/76; Order 74-24, § 296-79-250, filed 5/6/74; Order 70-6, § 296-79-250, filed 7/10/70, effective 8/10/70.]

WAC 296-79-255 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-260 Pulpwood storage and handling.

(1) Piling of logs.

- Logs must be piled or removed in an orderly manner.
- The piles must be stable and individual logs properly placed to prevent them from rolling or falling.
- The ends must not project into walkways, roadways or areas reserved for other purposes and
- Sufficient clearance must be maintained for safe travel of all vehicles and loads.

(2) Wire rope doglines used for towing or rafting must not be used when:

- They acquire jaggars to the extent that they present a hazard to the employees handling them; or
- When they are weakened to the extent that they are hazardous.

(3) Boom sticks must be capable of safely supporting the weight imposed upon them.

(4) Stiff booms must be:

- Made by fastening not less than two boom sticks together.
- Not less than 36 inches in width measured from outside to outside of the outer logs.
- Fastened together with not less than 4 inch by 6 inch cross ties or cable lashing properly recessed into notches in the boom sticks and secured.

(5) Pike poles must be kept in good repair. Conductive pike poles must not be used when it is possible that they may come in contact with electrical conductors.

(6) Logs must not be lifted over employees and employees must stay clear of the hazardous area near where logs are being lifted or swung.

(7) Storing or sorting on water or any boom work other than boom boat operations, must require a minimum of two persons.

(8) All mobile equipment used to handle logs, blocks or cants must be provided with adequate overhead protection.

(9) Unloading lines must be so arranged that it is not necessary for the worker to attach them on the pond or dump side of the load.

(10) Unauthorized vehicles and unauthorized foot traffic must not be allowed in any active sorting, storing, loading, or unloading areas.

(11) Log unloaders must not be moved about the premises with loads raised higher than absolutely necessary.

(12) Jackets or vests of fluorescent or other high visibility material must be worn by persons working on dry land log storage.

(13) All log dumps must be periodically cleared of bark and other debris.

(14) Handles of wood hooks must be locked to the shank to prevent them from rotating.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-260, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-260, filed 5/6/74; Order 70-6, § 296-79-260, filed 7/10/70, effective 8/10/70.]

WAC 296-79-270 Pulpwood preparation. (1) Barker feeding devices must be designed in such a manner that the operator will not be required to hold or make any physical contact with any log or bolt during the barking operations.

(2) A dog or locking device in addition to the motor switch, clutch, belt shifter or other power disconnecting device must be installed on all intermittent barking drums to prevent the drum from moving while it is being filled or emptied.

(3) Hydraulic barkers.

(a) The inlet and outlet areas of hydraulic barkers must be equipped with baffles or devices that will reasonably prevent material from flying out while the machine is in operation.

(b) The operator must be protected by at least five-ply laminated glass or material of equivalent strength.

(4) The high pressure hoses of hydraulic barkers must be secured in such a manner that the hose connection ends will be restrained if a hose connection fails.

(5) The feed operator's station must not be in direct line with the chipper blades. Suitable safeguards must be installed to prevent chips or chunks from being thrown out and striking the person feeding the machine.

(6) When the operator cannot readily observe the material being fed into the chipper, a mirror or other device must be installed in such a position that the ingoing material can be monitored.

(7) Metal bars or other nonchippable devices must not be used to clear jams or plug-up at the feed entrance to a chipper or hog while the machine is running.

(8) Water wheel speed governor.

- Water wheels, when directly connected to marker disks or grinders, must be provided with speed governors, if operated with gate wide open.

- Water wheels directly connected to pulp grinders must be provided with speed governors limiting the peripheral speed of the grinder to that recommended by the manufacturer.

(9) Knot cleaners of the woodpecker type.

- The operators of knot cleaners of the woodpecker type must wear eye protection equipment.

- Such knot cleaners should be enclosed to protect passersby from flying chips.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-270, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-270, filed 5/6/74; Order 70-6, § 296-79-270, filed 7/10/70, effective 8/10/70.]

WAC 296-79-27001 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-27003 Log hauls, slips, and carriages.

(1) Controls must be:

- Arranged to operate from a position where the operator will at all times be in the clear of logs, machinery, lines, and rigging.

- Marked to indicate their function.

(2) Log decks must be provided with effective means to prevent logs from accidentally rolling down the deck and onto the carriage or its runway.

(3) When needed for protection of personnel, an automatic stop or interlocking device must be installed on log hauls or slips. These devices are not a substitute for lockout.

(4) A barricade or other positive stop of adequate strength must be provided to protect the sawyer from rolling logs.

(5) Canting gear or other equipment must not hang over the log deck in such a manner as to endanger employees.

(6) The sawyer shall be primarily responsible for the safety of the carriage crew and offbearers and must exercise due care in the operation of the carriage and log turning devices.

(7) Feed works and log turning control levers must be so arranged that they may be secured when not in use and must be adequately guarded against accidental activation.

(8) A control device must be provided so that the sawyer may stop the head rig section of the mill without leaving the stand.

(9) An effective method of disengaging the head rig saws from the power unit must be installed on all head rigs where the power unit is not directly controlled by the sawyer.

(10) The sawyer must be safeguarded either by location or by use of substantial screens or approved safety glass.

(11) Carriages upon which employees are required to work must be solidly decked over and the employees properly protected.

(12) The feed control lever of friction or belt-driven carriage feed works must be designed to operate away from the saws or carriage track.

(13) A substantial stop or bumper must be installed at each end of the carriage run.

(14) Substantial sweeps must be installed in front of each carriage wheel. Such sweeps must extend to within 1/4 inch of the rails.

(15) Where power-operated log turners are used, carriage knees must be provided with goosenecks or other substantial means of protecting the carriage crew.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27003, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27003, filed 5/6/74.]

WAC 296-79-27005 Band saws. (1) Band saws must be given a thorough daily inspection and any deficiency reported and corrected.

(2) Any band saw found to have developed a crack greater than one-tenth the width of the saw must be:

- Removed from service until the width of the saw is reduced to eliminate the crack,

- The cracked section is removed, or

- The development of the crack is arrested by welding.

(3) Band saws must not be continued in use on the head rig for which they have been designed after they have been reduced 40% in width.

(4) Band saw guides must be maintained in good condition and proper alignment at all times.

(5) All head band saw wheels must have a minimum rim thickness of 5/8 inches, except for a distance not to exceed one inch from the front edge of the wheel.

(6) Band saws must not be run at a speed in excess of the manufacturer's recommendations.

(7) A band wheel that has developed a crack in the rim must be immediately removed from service. If a crack has developed in a spoke, the wheel must be removed from service until properly repaired.

(8) All band wheel guards must be constructed of lighter than ten U.S. Gauge metal, or not less than two-inch wood material or equivalent, attached to substantial frames. Necessary ventilating ports, not larger than two by four inches, and suitable doors or gates for the lubrication and repair of the saw will be permitted.

(9) Every band mill must be equipped with a saw catcher, rest or guard of substantial construction.

(10) Each gang ripper of band or straight saw type must have the cutting edges of the saw guarded by a hood or screen substantially secured to the framework of the machine.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27005, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27005, filed 5/6/74.]

WAC 296-79-27007 Circular saws speeds and repairs. (1) Circular saws must not be operated at speeds in excess of those specified by the manufacturers.

(2) Circular saws must be inspected for cracks each time the teeth are filed or set. They must be discontinued from use until properly repaired when found to have developed a crack exceeding the safe limits specified by the manufacturer.

(3) Damaged saws must be repaired only by persons experienced and knowledgeable in this type of work or by a manufacturers representative.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27007, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27007, filed 5/6/74.]

WAC 296-79-27009 Slasher saws-tables. (1) Slasher saws must be guarded in accordance with WAC 296-79-030(3) of this chapter.

(2) Saws must be stopped and locked or tagged out whenever it is necessary for any person to be on the slasher table.

(3) Saws below table where not protected by the frame of the machine, the underside of the slasher saws must be adequately guarded.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27009, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27009, filed 5/6/74.]

WAC 296-79-27011 Circular swing saws. (1) Each circular swing saw must be provided with a hood guard that completely encloses the upper half of the saw.

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(2) Each swing saw must be equipped with a positive stop at the extent of the swing necessary to cut the material.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27011, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27011, filed 5/6/74.]

WAC 296-79-27013 Drag saws—Fixed chain saws—Circular cut-off saws. (1) Saws must be so arranged that they will not project into any passageway when in an idle or working position. When existing conditions do not leave clear passage the saws must be fenced off in order to make it impossible for anyone to walk into them.

(2) Log decks must be equipped with a device to hold the material stable when being cut.

(3) Drag saws and fixed chain saws must be equipped with a device that will safely lock them in an "up" position.

(4) All persons must be in the clear before starting operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27013, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27013, filed 5/6/74.]

WAC 296-79-27015 Construction and use of pulp-wood splitters. (1) The activating control unit for a splitter must be of the clutch or positive acting type and must be so arranged and designed that it will not repeat without additional activation before starting a second cycle.

(2) The base or rest upon which the wood seats while being split must have a corrugated surface or other means shall be provided which will prevent the wood block or log from shifting as the pressure is applied.

(3) The splitter base or rest and wood to be split must be free of ice, snow, and chips.

(4) The splitter machine operator must have a clear, unobstructed view of the work area adjacent to the splitting operation when other workers must be in such area while blocks are being split.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27015, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27015, filed 5/6/74.]

WAC 296-79-280 Chip and hog fuel storage. (1) Entry into bins and silos.

(a) Entry into chip bins and silos, must be in compliance with the requirements of confined space entry, WAC 296-79-230, of this chapter.

(b) Chip and sawdust bins. Steam or compressed air lances, or other safe methods, must be used for breaking bridges and hangups.

(c) Employees must be prohibited from working under or on top overhangs or bridges. Extreme care must be taken to prevent chips or hog fuel from creating an overhang or bridging.

(d) Hog fuel bins must be provided with an approved railed platform or walkways near the top or other approved means must be provided for use of employees engaged in dislodging hog fuel.

(2) Exterior chip and hog fuel storage.

(a) When mobile equipment is used on top of hog fuel or chip piles, a roll-over protection system must be installed on the equipment.

(b) If the cab is of the enclosed type, windshield wipers must be installed.

(c) If used during hours of darkness the area must be adequately illuminated or the equipment must have adequate lights to provide the operator sufficient illumination to safely perform the work.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-280, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-280, filed 5/6/74; Order 70-6, § 296-79-280, filed 7/10/70, effective 8/10/70.]

WAC 296-79-290 Stock preparation and reprocessing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-290, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-290, filed 5/6/74; Order 70-6, § 296-79-290, filed 7/10/70, effective 8/10/70.]

WAC 296-79-29001 Digester valves and piping. (1)

The blow valve of a digester must be arranged so as to be operated from another room, remote from safety valves.

(2) Heavy duty pipe, valves, and fittings must be used between the digester and blow pit, blow tanks and dumptanks. These valves, fittings, and pipes must be inspected at least semiannually to determine the degree of deterioration and should be replaced when necessary.

(3) Digester blow valves or controls must be pinned or locked in closed position throughout the entire cooking period.

(4) Test holes in blow lines of piping systems must not be covered with insulation or other materials.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29001, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29001, filed 5/6/74.]

WAC 296-79-29003 Warning of digester being blown. (1) Procedures must be developed to ensure that digester operators are aware of personnel entering hazardous areas.

- Audible warning signals and red warning lights must be installed in areas which may be hazardous to personnel while digesters are being blown.

- Such devices must be activated prior to blowing a digester and the warning lights must remain lighted as long as the hazard exists.

(2) Blowing digester. Blow-off valves must be opened slowly.

(3) After the digester has started to be blown, the blow-off valve must be left open, and the hand plate must not be removed until the person responsible signals the blow-pit person that the blow is completed. Whenever it becomes necessary to remove the hand plate to clear stock, operators must wear eye protection equipment and protective clothing to guard against burns from hot stock.

(4) Blow-pit hoops must be maintained in a safe condition.

(5) Where the processes of the sulfate and soda operations are similar to those of the sulfite processes, the standard of WAC 296-79-29001 and 296-79-29003, of this chapter, applies to both processes.

(6) Means must be provided so the digester cook can signal the employee in the chip bin before starting to load the digester.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29003, filed 8/3/99, effective 11/3/99; Order 77-12, § 296-79-29003, filed 7/11/77; Order 76-7, § 296-79-29003, filed 3/1/76; Order 74-24, § 296-79-29003, filed 5/6/74.]

WAC 296-79-29005 Unplugging quick lime stoppages. Water must not be used to unplug quick lime stops or plugs in pipes or confined spaces.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29005, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29005, filed 5/6/74.]

WAC 296-79-29007 Bleach plant. (1) Work areas used for preparation and processing of bleaching mixtures must be equipped with properly designed exhaust ventilation systems capable of clearing the area of toxic gases. See chapter 296-62 WAC, Part H and Part L.

(2) Bleaching containers, such as cells, towers, etc., except the Bellmer type, must be completely covered on the top, with the exception of one small opening large enough to allow filling but too small to admit a person.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29007, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29007, filed 5/6/74.]

WAC 296-79-29009 Audible alarm in bleach plant. An audible alarm system must be installed and it must be activated whenever a serious leak or break develops in the bleach plant area which creates a health or fire hazard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29009, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29009, filed 5/6/74.]

WAC 296-79-29011 Pocket grinder doors. Doors of pocket grinders must be so designed and arranged as to keep them from closing accidentally.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29011, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29011, filed 5/6/74.]

WAC 296-79-29013 Pulping device procedures. Each company must develop a safe procedure which shall be followed for feeding, clearing jams, or removing foreign objects from any pulping device. These procedures must comply with applicable provisions of this standard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29013, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29013, filed 5/6/74.]

WAC 296-79-29015 Off machine repulping devices. (1) When fed manually from the floor above, conveniently located emergency stop devices must be provided at the top level.

(2) When fed from floor above:

- The chute opening, if less than standard guardrail height from the feed platform or floor, must be provided with a complete guardrail or other enclosure to standard guardrail height.

- Openings for manual feeding must be sufficient only for entry of stock and must be provided with at least two permanently secured crossrails, in accordance with, the general safety and health standards, WAC 296-24-75003.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29015, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29015, filed 5/6/74.]

WAC 296-79-29017 Pulping device cleaning, inspection and repairing. When cleaning, inspecting or performing other work that requires that persons enter pulping devices, all control devices must be locked or tagged out in accordance with the requirements of this standard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29017, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29017, filed 5/6/74.]

WAC 296-79-29019 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-29021 Shredders and blowers. (1) On manually fed broke shredders, the feed table must be of a height and distance from the knives as to prevent the operator from reaching or falling into the knives or the operator must be safeguarded by other acceptable means.

(2) A smooth-pivoted idler roll resting on the stock or feed table must be provided in front of feed rolls except when arrangements prevent the operator from standing closer than 36 inches to any part of the feed rolls.

(3) Any manually fed cutter, shredder, or duster must be provided with an idler roll as specified in (2) of this section or the operator shall use special hand-feeding tools.

(4) Blowers used for transporting materials must be provided with feed hoppers having outer edges located not less than 48 inches from the fan.

(5) The blower discharge outlets and work areas must be arranged to prevent material from falling on workers.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29021, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29021, filed 5/6/74.]

WAC 296-79-29023 Clearing shredder jams. To clear jams or blockage to the machine, the operator must use objects which will not create a hazard. The use of metal bars for such purposes is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29023, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29023, filed 5/6/74.]

WAC 296-79-29025 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-29027 Guillotine type roll splitters. (1) The engaging control for activating the guillotine blade must

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be a "deadman type" switch that demands continuous operator activation and must be:

- A positive two-hand operating control, or
- Located far enough from the cutting location so that the operator cannot reach the blade during the cutting process.

(2) Personnel must not position any part of the body under the blade.

(3) Rolls must be in the horizontal position while being split.

(4) Rolls must be centered directly below the blade.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29027, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-29027, filed 3/1/76; Order 74-24, § 296-79-29027, filed 5/6/74.]

WAC 296-79-29029 Broke hole. (1) An alarm bell or flashing light must be actuated or other suitable warning must be given before dropping material through a broke hole when persons working below may be endangered.

(2) Broke holes must be guarded to the fullest extent possible consistent with operational necessities. The degree of guarding provided by standard height and strength guardrails will be considered as a minimum acceptable level of protection.

(3) When repulping devices or feed conveyor systems for repulping devices are located beneath broke holes, special precautions must be used.

- The broke hole opening must be reduced to the smallest practical dimension.

- If the broke hole opening is large enough to permit a worker to fall through and is not guarded at least to the equivalent degree of protection provided by standard guardrails, any employee pushing broke down the broke hole must wear a safety belt or harness attached to a lanyard, and

- The lanyard must be fastened in such a manner that it is impossible for the person to fall into the repulping device.

(4) Guarding to the equivalent degree of protection provided by standard guardrails and meeting the requirements of subsections (2) and (3), may be achieved by the use of guard bars separated no more than 15-1/2 inches in a vertical plane and 12 inches in a horizontal plane, or any other location within that segment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29029, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-29029, filed 1/8/81; Order 74-24, § 296-79-29029, filed 5/6/74.]

WAC 296-79-29031 Industrial kiln guns and ammunition. The employer must ensure that there are written instructions, including safety procedures, for storing and operating industrial kiln guns and ammunition. All personnel working with this equipment must be instructed in these procedures and must follow them.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29031, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29031, filed 5/6/74.]

WAC 296-79-29033 Chlorine dioxide system. See chapter 296-62 WAC, Part P and chapter 296-67 WAC, process safety management.

(1) Sodium chlorate.

(a) Personnel handling and working with sodium chlorate must be thoroughly instructed in precautions to be used in handling and special work habits.

(b) Facilities for storage and handling of sodium chlorate must be constructed so as to eliminate possible contact of dry or evaporated sodium chlorate with wood or other material which could cause a fire or explosion.

(c) Sodium chlorate facilities should be constructed with a minimum of packing glands, stuffing boxes, etc.

(2) Chlorine dioxide.

Chlorine dioxide generating and storage facilities must be placed in areas which are adequately ventilated and are easily kept clean of wood, paper, pulp, etc., to avoid contamination which might cause a reaction. This can be accomplished by placing these facilities in a separate room or in a designated outside space.

(3) General.

(a) Facilities handling sodium chlorate and chlorine dioxide must be declared "no smoking" areas and must have signs posted accordingly.

(b) Management shall be responsible for developing written instructions including safety procedures for operating and maintaining the generator and associated equipment. All personnel working on this equipment must be thoroughly trained in these procedures and must follow them. A periodic review of these procedures is recommended.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29033, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29033, filed 5/6/74.]

WAC 296-79-29035 Piling and unpling pulp. (1)

Piles of wet lap pulp (unless palletized) must be stepped back one-half the width of the sheet for each 8 feet of pile height. Sheets of pulp must be interlapped to make the pile secure. Pulp must not be piled over pipelines to jeopardize pipes, or so as to cause overloading of floors, or to within 18 inches below sprinkler heads.

(2) Piles of pulp must not be undermined when being unpled.

(3) Floor capacities must be clearly marked on all floors.

(4) When sprinklers are used for fire protection in the storage area, baled paper and rags must be stored in stable piles which do not extend into the area necessary for the proper function of sprinkler systems.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29035, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-29035, filed 3/1/76; Order 74-24, § 296-79-29035, filed 5/6/74.]

WAC 296-79-29037 Chocking rolls. Rolls must be secured by chocks or other means to prevent movement when stored horizontally.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29037, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29037, filed 5/6/74.]

WAC 296-79-300 Machine room equipment and procedures. (1) Pulp and paper machines must be equipped with emergency stopping control(s) which can be actuated quickly from all normal operating stations. If useful for the safety of

personnel, the stopping control(s) must be interlocked with adequate retarding or braking action to stop the machine as quickly as is practical. The devices must consist of push buttons for electric motive power (or electrically operated engine stops), pull cords connected directly to the prime mover, control clutches, or other devices.

(2) Steps and footwalks along the fourdrinier/forming and press section must have nonslip surfacing and be complete with standard handrails, when practical.

(3) If a machine must be lubricated while in operation an automatic lubricating device must be provided or oil cups and grease fittings must be provided which can be serviced safely without exposing the worker to any hazards.

(4) All levers carrying weights must be so constructed that weights will not slip or fall off.

(5) Guarding inrunning nip points.

(a) The drums on pulp and paper machine winders.

(i) These drums must be provided with suitable guards to prevent a person from being caught between the roll and the front drum on the winder when the pinch point is on the operator's side.

(ii) Such guards must be interlocked with the drive mechanism to prevent the winder from running while the guard is not in place. Except that the winder may be wired to allow it to run at thread or jog speed only for adjustment and start-up purposes while the guard is not in position.

(iii) A zero speed switch or locking device must be installed to prevent the guard from being removed while the roll is turning above thread or jog speed.

(b) Rewinders.

When rewinding large rolls and the nip point is adjacent to the normal work area.

- The nip point must be protected by a barrier guard and

- Such guard must be interlocked with the drive mechanism to prevent operating the machine above thread or jog speed without the guard in place and

- A zero speed switch must be installed to prevent the guard from being raised while the roll is turning.

(c) Inrunning nips where paper is not being fed into a calender must be guarded.

(6) An audible alarm must be sounded prior to starting up any section of a pulp or paper machine. Sufficient time must be allowed between activation of the alarm system and start-up of the equipment to allow any persons to clear the hazardous area.

(7) When starting up a dryer section, steam to heat the drums must be introduced slowly and while the drums are revolving.

(8) A safe method must be used when starting paper into the nip of drum type reels or calender stacks. This may be accomplished by the use of feeder belts, carrier ropes, air carriage or other device or instrument.

- A rope carrying system should be used wherever possible at points of transfer, or

- Sheaves should be spaced so that they do not create a nip point with each other and the sheave and its support should be capable of withstanding the speed and breaking strength of the rope for which they are intended.

(9) Employees must not feed a stack with any hand held device which is capable of going through the nip.

(10) Employees must not attempt to remove a broken carrier rope from a dryer while the section is running at operating speed.

(11) Employees must stop the dryer to remove a wrap except in cases where it can be safely removed by using air or other safe means.

(12) To remove deposits from rolls, a specially designed scraper or tool shall be used. Scraping of rolls must be performed on the outgoing nip side.

(13) Doctor blades.

(a) Cleaning. Employees must not place their hands between the sharp edge of an unloaded doctor blade and the roll while cleaning the doctor blade.

(b) Doctor blades must have the sharp edges properly guarded during transportation and storage.

(c) Special protective gloves must be provided and must be worn by employees when filing or handling sharp edged doctor blades.

(14) Handling reels.

(a) Reels must stop rotating before being lifted away from reel frame.

Crane hooks must not be used to stop a turning reel.

(b) Exposed rotating reel shafts with square block ends must be guarded.

(c) The crane operator must ascertain that reels are properly seated at winder stand or at reel arms before they disengage the hooks.

(d) On stored reels, a clearance of at least 8 inches between the reels of paper must be maintained.

(15) All winder shafts must be equipped with a winder collar guide. The winder must have a guide rail to align the shaft for easy entrance into the opened rewind shaft bearing housing. If winder shafts are too heavy for manual handling, mechanical equipment must be used.

(16) Shaftless winders must be provided with a barrier guard of sufficient strength and size to confine the rolls in the event they become dislodged while running.

(17) All calender stacks and spreader bars must be grounded according to chapter 296-24 WAC, Part L as protection against shock induced by static electricity.

(18) Nonskid type surface required.

(a) All exposed sole plates between dryers, calenders, reels, and rewinders must have a nonskid type surface.

(b) A nonskid type surface must be provided in the work areas around the winders or rewinders.

(19) If a powered roll ejector is used it should be interlocked to prevent accidental actuation until the receiving platform or roll lowering table is in position to receive the roll.

(20) Employees must keep clear of hazardous areas around the lowerator, especially all lowerator openings in a floor and where roll is being discharged.

(21) Provision must be made to hold the rider roll when in a raised position unless counterbalancing eliminates the hazard.

(22) Drain openings in pits. Flush floor drain openings larger than 3 inches in diameter in the bottom of pits must be guarded to prevent workers from stepping through, while working in this area.

(23) Employees must not enter into or climb on any paper machine roll that is subject to free turning unless a positive locking device has been installed to prevent the roll from turning.

(24) The employer must ensure sufficient inspection and nondestructive examination of reel spool and calender roll journals. The type and frequency of testing must be adequate to detect indications of failure. Any reel spool or calender roll journal found to have an indication of failure must be removed from service. Nondestructive examination personnel must be qualified in accordance with SNT-TC 1A.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-300, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-79-300, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-300, filed 1/8/81; Order 76-7, § 296-79-300, filed 3/1/76; Order 74-24, § 296-79-300, filed 5/6/74; Order 70-6, § 296-79-300, filed 7/10/70, effective 8/10/70.]

WAC 296-79-310 Converting operations (bag and container manufacturing, printing, coating, finishing and related processes).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-310, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-310, filed 5/6/74; Order 70-6, § 296-79-310, filed 7/10/70, effective 8/10/70.]

WAC 296-79-31001 General requirements for converting operations (bag and container manufacturing, printing, coating, finishing and related processes). (1) Guillotine-type trimmers must be designed in a manner which will require the operator to use both hands simultaneously to activate the cutting blade. If machine helpers are employed in the control function of the cutter, separate two-hand controls must be provided for the control function performed by the helper.

(2) Guillotine-type trimmers must be designed in a manner that the trimming blade will not repeat unless manually reactivated.

(3) Sorting and counting tables must be smooth and free from splinters, with edges and corners rounded.

Paddles must be smooth and free from splinters.

(4) Devices (i.e., mirrors) must be installed to assist the converting machine operator in viewing blind work stations where a hazard exists.

(5) Mechanical lifting devices must be provided for placing and removing rolls from rewinders. Rolls must not be left suspended overhead while the controls are unattended.

(6) When using a crane or hoist to place rolls into a backstand and the operator cannot see both ends of the backstand, assistance will be provided or appropriate devices will be installed to eliminate the hazards involved. The operator must ascertain that rolls are properly seated at winder stand or at roll arms before disengaging the hooks.

(7) Slitters, slotters, and scorers not in use must be properly stored so a hazard is not created.

(8) All power closing sections must be equipped with an audible warning system which will be activated when closing the sections.

(9) Roll-type embosser. The nipping point located on the operator's side must be guarded by either automatic or manually operated barrier guards interlocked with the drive.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-31001, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-31001, filed 3/1/76; Order 74-24, § 296-79-31001, filed 5/6/74.]

WAC 296-79-31003 Corrugator. (1) Every recessed floor conveyor system must be identified by standard color coding, and so designed and installed to minimize tripping hazards.

(2) All areas subject to wet processes must be provided with drains.

• Drain trenches must be provided with gratings flush with the adjoining floor.

• Use of curbing in work areas should be avoided in new installations. If the use of curbing cannot be avoided, the design must be such that the curbs do not constitute a tripping hazard in normal working areas. When curbing exists and constitutes a hazard, it must be color coded.

(3) Rails of rail mounted devices such as roll stands must be flush with the adjacent floor, and so installed to provide a minimum of 18 inches clearance between the equipment and walls or other fixed objects.

(4) All corrugating and pressure rolls must be equipped with appropriately designed and installed threading guides so as to prevent contact with the infeed nip of the various rolls by the operator.

(5) A minimum of 4 inches clearance or effective nip guarding must be maintained between heated drums, idler rolls, and cross shafting on all preheaters and preconditioners.

(6) Lower elevating conveyor belt rolls on the single facer bridge must have a minimum nip clearance of 4 inches or effective nip guarding.

(7) Web shears at the discharge end of the double facer must be equipped with barrier type guards.

(8) Slitter stations not in use must be disconnected from the power source by positive means.

(9) Elevating type conveyors must have the floor area color-coded.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-31003, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-31003, filed 5/6/74.]

WAC 296-79-31005 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-31007 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-31009 Die cutting. Bobst type die cutters.

A minimum of 4 inches must be provided between the end of the slat and the guide bar.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-31009, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-31009, filed 5/6/74.]

WAC 296-79-31011 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-31013 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-79-320 Sulfite recovery furnace area requirements. (1) The employer must have a program to train all personnel associated with recovery boiler operations in safe operating procedures and emergency shutdown procedures.

(2) An audible warning system must be installed in kraft and soda base sulfite recovery furnace areas and must be actuated whenever an emergency exists.

(3) All personnel who enter the recovery furnace area must understand the emergency evacuation procedure.

(4) Warning system maintenance. Emergency warning systems in the recovery furnace areas must be kept in proper working condition and must be tested or checked weekly.

(5) Personnel must stand to the side while opening a furnace or boiler firebox door.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-320, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-320, filed 5/6/74; Order 70-6, § 296-79-320, filed 7/10/70, effective 8/10/70.]

Chapter 296-86A WAC

REGULATIONS AND FEES FOR ALL ELEVATORS, DUMBWAITERS, ESCALATORS AND OTHER LIFTING DEVICES

(Formerly chapter 296-86 WAC)

WAC	
296-86A-020	When I apply for my construction, alteration or relocation permit, what permit fees will I have to pay?
296-86A-025	When I apply for my material lift installation, alteration or relocation permit, what permit fees will I have to pay?
296-86A-028	Are the construction and alteration permit fees that I pay refundable?
296-86A-030	What installation permit fees will I have to pay for personnel and material hoists?
296-86A-040	Do I need to submit my plans for new installations and alterations to the department for approval?
296-86A-060	What annual operating permit fees will I have to pay?
296-86A-070	Can I obtain a supplemental inspection from the department?
296-86A-073	Can I obtain technical services from the department's elevator section?
296-86A-074	Can I request an inspection outside of the department's normal work hours?
296-86A-075	Do I pay a fee when my conveyance is inspected?
296-86A-080	Is there a fee for inspecting regular elevators used as temporary personnel elevators?

WAC 296-86A-020 When I apply for my construction, alteration or relocation permit, what permit fees will I have to pay? The following permit fees apply to all conveyances except for material lifts:

TOTAL COST	FEE
\$250.00 TO AND INCLUDING \$1,000	\$ 30.50
\$1,001 TO AND INCLUDING \$15,000	
For the first \$1,001	43.00

TOTAL COST	FEE
For each additional \$1,000 or fraction thereof	8.50
\$15,001 TO AND INCLUDING \$100,000	
For first \$15,001	165.25
For each additional \$1,000 or fraction thereof	5.50
OVER \$100,001	
For first \$100,001	694.50
For each additional \$1,000 or fraction thereof	4.50

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-020, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-020, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-025 When I apply for my material lift installation, alteration or relocation permit, what permit fees will I have to pay? The following permit fees apply to the installation, alteration and relocation of material lifts:

TOTAL COST	FEE
\$250.00 TO AND INCLUDING \$1,000	\$ 28.00
\$1,001 TO AND INCLUDING \$15,000	
For the first \$1,001	39.25
For each additional \$1,000 or fraction thereof	7.75
\$15,001 TO AND INCLUDING \$100,000	
For first \$15,001	150.25
For each additional \$1,000 or fraction thereof	5.00
OVER \$100,001	
For first \$100,001	631.50
For each additional \$1,000 or fraction thereof	4.00

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-025, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-025, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-028 Are the construction and alteration permit fees that I pay refundable? Your construction and alteration permit fees are refundable **unless your permits have expired. If your permits have expired, no refunds for these permits will be issued to you.** All requests for refunds must be addressed to the elevator section in writing and must identify the specific permits for which refunds are being requested. In those cases where you are entitled to a refund, the department will charge you a twenty-six-dollar processing fee for each refund you request.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-028, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-028, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-030 What installation permit fees will I have to pay for personnel and material hoists? For each personnel hoist or material hoist you install, you will have to pay an installation fee of one hundred one dollars and seventy-five cents.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-030, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-030, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-040 Do I need to submit my plans for new installations and alterations to the department for approval? You must submit all new installation plans and plans for major alterations to the department for approval. Your plans must be submitted, in duplicate, to the elevator section **prior to the start of construction.** To be approved, they must comply with the latest edition of the American Society of Mechanical Engineers (ASME) A17.1, National Electrical Code (NEC) and applicable Washington Administrative Codes (WAC) adopted by the department. In addition, your plans must include all information pertinent to determining whether each installation/alteration complies with all applicable codes. Once approved, a copy of your plan must be kept on your job site until all acceptance tests have been witnessed by the department. **Any alterations to your approved plan must be submitted to the department for approval before a final inspection will be conducted.** The nonrefundable fees for reviewing your plans are:

For each installation/major alteration	\$ 22.25
If more than two sets of plans are submitted, the fee for reviewing each additional set	22.25

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-040, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-040, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-060 What annual operating permit fees will I have to pay? No annual operating permit will be issued to you until you have paid an appropriate fee to the department. The following is a schedule of those fees.

TYPE OF CONVEYANCE	ANNUAL OPERATING PERMIT FEE
Each hydraulic elevator	\$ 78.75
Each roped-hydraulic elevator	101.75
plus \$ 7.75 for each hoistway opening in excess of two	7.75
Each cable elevator	101.75
plus \$ 7.75 for each hoistway opening in excess of two	7.75
Each cable elevator traveling more than 25 feet without an opening- \$ 10.75 for each 25 foot traveled without openings	10.75
Each limited-use/limited-application elevator	78.75
Each sidewalk freight elevator	78.75
Each hand-powered manlift or freight elevator	50.75
Each incline elevator in other than a private residence	101.75
Each belt manlift	78.75
Each boat launching elevator	78.75

TYPE OF CONVEYANCE	ANNUAL OPERATING PERMIT FEE
Each auto parking elevator	78.75
Each escalator	78.75
Each moving walk	78.75
Each dumbwaiter in other than a private residence	50.75
Each people mover	67.50
Each stair lift in other than a private residence	50.75
Each wheel chair lift in other than a private residence	50.75
Each special purpose elevator	78.75
Each personnel hoist	78.75
Each grain elevator personnel lift.	78.75
Each material hoist	78.75
Each casket lift	78.75
Each material lift	67.50
Each inclined stairway chair lift in private residence	16.50
Each inclined wheel chair lift in a private residence	22.25
Each vertical wheel chair lift in a private residence	28.00
Each inclined elevator at a private residence	78.75
Each dumbwaiter in a private residence	22.25
Each private residence elevator	50.75
Each private residence elevator installed in other than a private residence	78.75

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-060, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-060, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-070 Can I obtain a supplemental inspection from the department? Any person, firm, corporation or governmental agency can obtain a supplemental inspection from the department by paying a fee of two hundred ninety-one dollars and fifty cents per day plus the standard per diem and mileage allowance granted to department inspectors.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-070, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-070, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-073 Can I obtain technical services from the department's elevator section? You can obtain elevator field technical services from the department by paying a fee of fifty-six dollars and twenty-five cents per hour plus the standard per diem and mileage allowance granted to department inspectors. These field technical services may include code evaluation, code consultation, plan examination, code interpretation and clarification of technical data relating to the application of the department's conveyance rules. **Field technical services do not include inspections.**

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-073, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-073, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-074 Can I request an inspection outside of the department's normal work hours? You may request an inspection outside of normal work hours, which are 7:00 a.m. to 5:00 p.m., if an inspector is available and the inspection is authorized by the department. However, the fee for such an inspection is seventy dollars and seventy-five cents per hour plus the standard per diem and mileage allowance granted to department inspectors. This fee is in addition to any other fees required for your project.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-074, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-074, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-075 Do I pay a fee when my conveyance is inspected? Not necessarily, some inspections do not require a fee. For example, the initial annual inspection of a conveyance does not require one. Neither does the **initial inspection** of any conveyance constructed, altered or relocated. The following table explains which inspections do require a fee:

INSPECTION	FEE
If a conveyance does not pass an initial inspection and a second inspection (reinspection) is required, the fee for each conveyance inspected*	\$ 78.75
If a third inspection (reinspection) is required, the fee for each conveyance inspected*	101.75

***These "reinspection" fees are in addition to the fees charged under WAC 296-86A-020, 296-86A-025 and 296-86A-030 and must be paid before an annual operating permit will be issued.** The department may waive reinspection fees when it is not possible to conduct the inspection and the inability to inspect is not the fault of the party requesting and/or paying for the inspection. The department may also waive reinspection fees for reasons of justice and equity which prevent their payment.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-075, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-075, filed 5/29/98, effective 6/30/98.]

WAC 296-86A-080 Is there a fee for inspecting regular elevators used as temporary personnel elevators? Yes, the fee for **inspecting and testing** regular elevators used as temporary personnel elevators is sixty-seven dollars and fifty cents. This fee is in addition to any other fees required in this chapter.

This sixty-seven dollar and fifty cent fee purchases a thirty-day temporary use permit which may be renewed at the discretion of the department. When this temporary use permit is purchased, a notice declaring that the equipment has not been finally approved must be conspicuously posted on the elevator.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-86A-080, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 70.87 RCW. 98-12-043, § 296-86A-080, filed 5/29/98, effective 6/30/98.]

Chapter 296-104 WAC

BOARD OF BOILER RULES—SUBSTANTIVE

WAC

296-104-001	Administration—To what do these rules apply?
296-104-002	Repealed.
296-104-010	Administration—What are the definitions of terms used in this chapter?
296-104-015	Administration—When and where are the board meetings held?
296-104-018	Administration—How are rules interpreted and revised?
296-104-020	Administration—What are the filing requirements for boilers and pressure vessels before their installation?
296-104-025	Administration—What are the notification requirements following an accident involving a boiler or pressure vessel?
296-104-030	Administration—What is the penalty for operation of unsafe boilers or unfired pressure vessels?
296-104-035	Administration—What are conflicts of interest for inspectors?
296-104-040	Administration—When should inspectors submit inspection reports and on what forms?
296-104-045	Administration—What are the insurance companies' responsibilities?
296-104-050	Administration—What examinations must a boiler inspector take?
296-104-055	Administration—What are the examination fees?
296-104-060	Administration—When shall inspectors' commissions be issued, suspended, or revoked?
296-104-065	Administration—How should a certified or commissioned inspector obtain a Washington state commission?
296-104-100	Inspection—How often must boilers and unfired pressure vessels be inspected?
296-104-102	Inspection—What are the standards for in-service inspection?
296-104-105	Inspection—How much time is required for notification of inspection?
296-104-107	Repealed.
296-104-110	Inspection—What will be done when boilers or unfired pressure vessels are deemed unsafe or defective?
296-104-115	Inspection—What will be done when defective conditions are concealed by covering?
296-104-125	Inspection—Are certificate fees required?
296-104-130	Inspection—When are inspection certificates valid?
296-104-135	Inspection—What are the requirements for restamping of boilers and unfired pressure vessels?
296-104-140	Inspection—How should a state stamp be applied?
296-104-145	Inspection—How are groups of vessels operating as a single unit classified?
296-104-150	Inspection—How are unfired steam boilers classified?
296-104-151	Inspection—What are the requirements for rental boilers?
296-104-155	Inspection—What preparations are necessary prior to internal inspections?
296-104-160	Inspection—What happens if a boiler or unfired pressure vessel is improperly prepared for inspection?
296-104-165	Inspection—When should coverings be removed for inspection?
296-104-170	Inspection—When are shop inspections required?
296-104-285	Repealed.
296-104-502	Repairs—What are the requirements for nonnuclear boilers and unfired pressure vessel repairs and alterations?
296-104-700	Inspection fees—Certificate fees—Expenses.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-104-002	Approval by director. [Approval, filed 3/23/60.] Repealed by 99-22-026, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.030 and 70.79.040.
296-104-107	Inspection—Which unfired pressure vessels in places of public assembly are subject to these rules? [Statutory Authority: RCW 70.79.030 and 70.79.040. 97-20-109, § 296-104-107, filed 9/30/97, effective 10/31/97.] Repealed by 99-22-026, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.030 and 70.79.040.
296-104-285	Unfired pressure vessels in places of public assembly. [Statutory Authority: RCW 70.79.030. 78-03-057 (Order 78-3), § 296-104-285, filed 2/22/78.] Repealed by 99-08-049, filed 4/1/99, effective 5/2/99. Statutory Authority: RCW 70.79.030 and 70.79.040.

WAC 296-104-001 Administration—To what do these rules apply? The following rules and regulations apply to all boilers and unfired pressure vessels except those exempt under RCW 70.79.080. Boilers and unfired pressure vessels listed under RCW 70.79.090 are exempt from inspection and fees, but shall comply with all rules for construction, installation, repairs and general requirements.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-001, filed 10/26/99, effective 11/26/99; Promulgation, filed 3/23/60.]

WAC 296-104-002 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-104-010 Administration—What are the definitions of terms used in this chapter? "Agriculture purposes" shall mean any act performed on a farm in production of crops or livestock, and shall include the storage of such crops and livestock in their natural state, but shall not be construed to include the processing or sale of crops or livestock.

"API-510" shall mean the Pressure Vessel Inspection Code of the American Petroleum Institute with addenda and revisions, thereto made and approved by the institute which have been adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

"ASME Code" shall mean the boiler and pressure vessel code of the American Society of Mechanical Engineers with amendments thereto made and approved by the council of the society which have been adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

"Attendant" shall mean the person in charge of the operation of a boiler or unfired pressure vessel.

"Automatic operation of a boiler" shall mean unattended control of feed water and fuel in order to maintain the pressure and temperature within the limits set. Controls must be such that the operation follows the demand without interruption. Manual restart may be required when the burner is off because of low water, flame failure, power failure, high temperatures or pressures.

"Board of boiler rules" or "board" shall mean the board created by law and empowered under RCW 70.79.010.

"Boilers and/or pressure vessels" - below are definitions for types of boilers and pressure vessels used in these regulations:

- **"Condemned boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel that has been inspected and declared unsafe or disqualified by legal requirements by an inspector who has applied a stamping or marking designating its condemnation.
 - **"Low pressure heating boiler"** shall mean a steam or vapor boiler operating at a pressure not exceeding 15 psig or a boiler in which water or other fluid is heated and intended for operation at pressures not exceeding 160 psig or temperatures not exceeding 250 degrees F by the direct application of energy from the combustion of fuels or from electricity, solar or nuclear energy including lined potable water heaters.
 - **"Nonstandard boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel that does not bear marking of the codes adopted in WAC 296-104-200.
 - **"Power boiler"** shall mean a boiler in which steam or other vapor is generated at a pressure of more than 15 psig for use external to itself or a boiler in which water or other fluid is heated and intended for operation at pressures in excess of 160 psig and/or temperatures in excess of 250 degrees F by the direct application of energy from the combustion of fuels or from electricity, solar or nuclear energy.
 - **"Reinstalled boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel removed from its original setting and reset at the same location or at a new location without change of ownership.
 - **"Rental boiler"** shall mean any power or low pressure heating boiler that is under a rental contract between owner and user.
 - **"Second hand boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel of which both the location and ownership have changed after primary use.
 - **"Standard boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel which bears the marking of the codes adopted in WAC 296-104-200.
 - **"Unfired pressure vessel"** shall mean a closed vessel under pressure excluding:
 - * Fired process tubular heaters;
 - * Pressure containers which are integral parts of components of rotating or reciprocating mechanical devices where the primary design considerations and/or stresses are derived from the functional requirements of the device;
 - * Piping whose primary function is to transport fluids from one location to another;
 - * Those vessels defined as low pressure heating boilers or power boilers.
 - **"Unfired steam boiler"** shall mean a pressure vessel in which steam is generated by an indirect application of heat. It shall not include pressure vessels known as evaporators, heat exchangers, or vessels in which steam is generated by the use of heat resulting from the operation of a processing system containing a number of pressure vessels, such as used in the manufacture of chemical and petroleum products, which will be classed as unfired pressure vessels.
- "Certificate of competency"** shall mean a certificate issued by the state board of boiler rules to a person who has

passed an examination prescribed by the board of boiler rules.

"Commission" shall mean an annual state commission/commission card issued to a person in the employ of the state, an insurance company or a company owner/user inspection agency holding a certificate of competency which authorizes them to perform inspections of boilers and/or unfired pressure vessels.

"Department" as used herein shall mean the department of labor and industries of the state of Washington.

"Director" shall mean the director of the department of labor and industries.

"Domestic and/or residential purposes" shall mean serving a private residence or an apartment house of less than six families.

"Existing installations" shall mean any boiler or unfired pressure vessel constructed, installed, placed in operation, or contracted for before January 1, 1952.

"External inspection" shall mean an inspection made while a boiler or unfired pressure vessel is in operation and includes the inspection and demonstration of controls and safety devices required by these rules.

"Hot water heater" shall mean a closed vessel designed to supply hot water for external use to the system. All vessels must be listed by a nationally recognized testing agency and shall not exceed any of the following limits:

- (a) Pressure of 160 psi (1100 kpa);
- (b) Temperature of 210 degrees F (99 C);
- (c) Capacity of 120 U.S. gallon (454 liters);
- (d) Input of 200,000 BTU/hr (58.58 kw).

Each vessel shall be protected with an approved temperature and pressure safety relief valve.

"Inspector" shall mean the chief boiler inspector, a deputy inspector, or a special inspector.

- **"Chief inspector"** shall mean the inspector appointed under RCW 70.79.100 who serves as the secretary to the board without a vote.
- **"Deputy inspector"** shall mean an inspector appointed under RCW 70.79.120.
- **"Special inspector"** shall mean an inspector holding a Washington commission identified under RCW 70.79.130.

"Internal inspection" shall mean an inspection made when a boiler or unfired pressure vessel is shut down and handholes, manholes, or other inspection openings are open or removed for examination of the interior. An external ultrasonic examination of unfired pressure vessels 36" inside diameter and under, shall constitute an internal inspection.

"Nationwide engineering standard" shall mean a nationally accepted design method, formulae and practice acceptable to the board.

"NBIC" shall mean the National Board Inspection Code of the National Board of Boiler and Pressure Vessel Inspectors with addenda and revisions, thereto made and approved by the National Board of Boiler and Pressure Vessel Inspectors and adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

"Owner" or **"user"** shall mean a person, firm, or corporation owning or operating any boiler or unfired pressure vessel within the state.

"Owner/user inspection agency" shall mean an owner or user of pressure vessels that maintains an established inspection department, whose organization and inspection procedures meet the requirements of a nationally recognized standard acceptable to the department.

"Place of public assembly" or "assembly hall" shall mean a building or portion of a building used for the gathering together of 50 or more persons for such purposes as deliberation, education, instruction, worship, entertainment, amusement, drinking, or dining or waiting transportation. This shall also include child care centers (those agencies which operate for the care of thirteen or more children), public and private hospitals, nursing and boarding homes.

"Special design" shall mean a design using nationwide engineering standards other than the codes adopted in WAC 296-104-200 or other than allowed in WAC 296-104-230.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-010, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-010, filed 10/28/98, effective 11/28/98; 96-21-081, § 296-104-010, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-010, filed 10/5/94, effective 11/5/94; 93-12-014, § 296-104-010, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-010, filed 5/20/92, effective 6/20/92. Statutory Authority: RCW 70.79.240. 88-01-064 (Order 87-25), § 296-104-010, filed 12/17/87. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-01-088 (Order 85-26), § 296-104-010, filed 12/19/85; Order 72-11, § 296-104-010, filed 7/7/72; Part I, filed 3/23/60.]

WAC 296-104-015 Administration—When and where are the board meetings held? The board of boiler rules shall hold its regular meetings in January, March, May, September and November of each year. The time, place, and date of each regular meeting shall be set by the chairman of the board and published annually. Special meetings may be called by the chair.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-015, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-015, filed 9/15/95, effective 10/16/95. Statutory Authority: RCW 70.79.040. 91-11-107, § 296-104-015, filed 5/22/91, effective 6/22/91. Statutory Authority: RCW 70.79.050. 90-07-082, § 296-104-015, filed 3/21/90, effective 4/21/90. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-01-088 (Order 85-26), § 296-104-015, filed 12/19/85; Order 72-11, § 296-104-015, filed 7/7/72.]

WAC 296-104-018 Administration—How are rules interpreted and revised? Stakeholders may request clarifications and interpretations of these rules by contacting the chief inspector. Interpretations will be brought to the board if the inquirer is aggrieved by the interpretation of the chief inspector (RCW 70.79.360). The board will consider written requests for interpretations and revisions to these definitions, rules, and regulations. Inquiries shall be limited to requests for interpretation of the rules or to proposed revisions to the existing rules and shall be submitted in the following format:

(1) Scope. Identify a single rule or closely related rules that are in dispute.

(2) Background. State the purpose of the inquiry, which should be either to obtain an interpretation or to propose a revision to existing rules. Provide concise information needed for the board's understanding of the inquiry, including references to the WAC section as well as other code and/or standards paragraphs.

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(3) Inquiry structure. Provide statements in a condensed and precise question format and, where appropriate, compose in such a way that "yes" or "no" (perhaps with provisos) would be an acceptable reply.

(4) Proposed reply. State what it is believed the rule requires. If in the inquirer's opinion a revision to the definitions, rules, and regulations is needed, recommended wording should be provided.

Inquiries shall be submitted by mail to:

Board of Boiler Rules
% Chief Inspector
Department of Labor & Industries
Boiler Section
P.O. Box 44410
Olympia, WA 98504-4410

or

Inquiries shall be submitted by delivery to:

Board of Boiler Rules
% Chief Inspector
Department of Labor & Industries
Boiler Section
7273 Linderson Way SW
Tumwater, WA 98501

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-018, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040. 92-11-070, § 296-104-018, filed 5/20/92, effective 6/20/92.]

WAC 296-104-020 Administration—What are the filing requirements for boilers and pressure vessels before their installation? Manufacturers data reports on boilers and pressure vessels as required by the provisions of the construction codes shall be filed by the owner or his agent with the chief inspector or the National Board of Boiler and Pressure Vessel Inspectors before installation. When the boilers or pressure vessel are of special design or construction not covered by the construction codes (unless otherwise exempted by the rules and regulations), the owner or user shall apply to the board of boiler rules in writing for permission to install such boilers or pressure vessels and shall supply such details of design and construction as may be required by the board of boiler rules and approval shall be secured before construction is started. When second hand boilers or pressure vessels are to be reinstalled, the owner or user shall file a data report or construction details, as required, and secure approval from the chief inspector before starting installation.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-020, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-020, filed 9/15/95, effective 10/16/95; Order 74-37, § 296-104-020, filed 11/8/74; Part II, § 1, filed 3/23/60.]

WAC 296-104-025 Administration—What are the notification requirements following an accident involving a boiler or pressure vessel? When an accident occurs which renders a boiler or unfired pressure vessel inoperative, the owner or user shall notify the chief inspector, and submit a detailed report of the accident. In cases of accidents, such as explosions or those resulting in personal injury, notice to the chief inspector shall be given immediately by telephone or electronic means designed to assure its earliest possible

receipt. Neither the boiler or unfired pressure vessel nor any parts thereof shall be removed or disturbed before an inspection has been made by the chief inspector, or his designee except for the purpose of saving life or limiting consequential damage. The inspector making the investigation and inspection shall report to the chief inspector as soon as possible. The boiler or pressure vessel owner shall be responsible for all costs of the department's investigation.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-025, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-025, filed 10/16/96, effective 11/16/96; 95-19-058, § 296-104-025, filed 9/15/95, effective 10/16/95; Part II, § 2, filed 3/23/60.]

WAC 296-104-030 Administration—What is the penalty for operation of unsafe boilers or unfired pressure vessels? In the event that a boiler or unfired pressure vessel is unsafe to operate, the inspection certificate shall be suspended. Any person, firm, partnership, or corporation causing such objects to be operated under pressure without a valid certificate of inspection shall be in violation of RCW 70.79.320 and subject to the penalties specified in WAC 296-104-701.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-030, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-030, filed 9/15/95, effective 10/16/95; Part II, § 3, filed 3/23/60.]

WAC 296-104-035 Administration—What are conflicts of interest for inspectors? Inspectors commissioned by the state of Washington shall not engage in the sale of any service, article, or device or promote any other activity for personal gain relating to boilers or unfired pressure vessels or their appurtenances.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-035, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-035, filed 9/15/95, effective 10/16/95; Part II, § 4, filed 3/23/60.]

WAC 296-104-040 Administration—When should inspectors submit inspection reports and on what forms? Inspectors shall submit reports of inspections of boilers and unfired pressure vessels on appropriate forms approved by the chief inspector. Routine reports of inspections shall be submitted within thirty days of inspection. Reports of reinspection after suspension of an inspection certificate shall be submitted by an inspector employed by the in-service inspection agency as soon as notice of corrective action has been received.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-040, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-040, filed 9/15/95, effective 10/16/95; Order 74-37, § 296-104-040, filed 11/8/74; Part II, § 5, filed 3/23/60.]

WAC 296-104-045 Administration—What are the insurance companies' responsibilities? All insurance companies shall notify the chief inspector within thirty days of all boiler and/or unfired pressure vessel risks written, canceled, not renewed or suspended because of unsafe conditions. Special inspectors shall perform all in-service inspections of boilers and unfired pressure vessels insured by their employer. After a repair or alteration the in-service inspector

is responsible to assure a Record of Welded Repair form is completed and submitted to the department.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-045, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-045, filed 9/15/95, effective 10/16/95; Part II, § 6, filed 3/23/60.]

WAC 296-104-050 Administration—What examinations must a boiler inspector take? Examination for certificate of competency shall be held at locations selected by the board, four times each year, namely, the first Wednesday and following Thursday of the months of March, June, September and December. Special examinations may be held when considered necessary by the board.

Applicants for examination shall have had at least three years practical experience in the construction, maintenance, repair or operation of high pressure boilers or unfired pressure vessels as a mechanical engineer, steam engineer or boiler maker, or shall have had at least three years experience as an inspector of high pressure boilers and/or unfired pressure vessels. A credit of two years of the required experience will be given to applicants holding an engineering degree from a recognized college of engineering.

Application for examination for certificate of competency shall be in writing upon a form to be furnished by the director stating the school and education of the applicant, a list of employers, period of employment and position held with each employer. Applications containing willful falsification or untruthful statements shall be rejected.

If the applicant's history and experience meet with the approval of the board of boiler rules, the candidate shall be given a written examination. The test will deal with Washington state boilers and unfired pressure vessels law as well as the construction, installation, operation, maintenance and repair of boilers and/or unfired pressure vessels and their appurtenances. If the applicant is accepted on the merits of this examination, a certificate of competency will be issued by the chief inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-050, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040, 94-21-002, § 296-104-050, filed 10/5/94, effective 11/5/94. Statutory Authority: Chapter 70.79 RCW, 89-15-025 (Order 89-05), § 296-104-050, filed 7/13/89, effective 8/13/89. Statutory Authority: RCW 70.79.030, 78-03-057 (Order 78-3), § 296-104-050, filed 2/22/78; Part II, § 7, filed 3/23/60.]

WAC 296-104-055 Administration—What are the examination fees? A fee of sixty dollars will be charged for each applicant sitting for an inspection examination(s). If an applicant fails to pass the examination this fee shall be good for one year during which a reexamination may be taken. Checks for examination fees shall be made payable to the state treasurer.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-055, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040, 93-12-014, § 296-104-055, filed 5/21/93, effective 6/21/93. Statutory Authority: RCW 70.79.030 and 70.79.330, 82-24-025 (Order 82-36), § 296-104-055, filed 11/23/82, effective 1/1/83; Order 74-37, § 296-104-055, filed 11/8/74; Part II, § 8, filed 3/23/60.]

WAC 296-104-060 Administration—When shall inspectors' commissions be issued, suspended, or revoked? Upon the request of any company authorized to insure and insuring against loss from explosion of boilers and/or unfired pressure vessels in this state, or upon the request of any company with an owner/user inspection agency operating boilers and/or unfired pressure vessels in this state, the chief inspector shall issue a commission as a special inspector and an identifying commission card to any inspector actively engaged in boiler and/or unfired pressure vessel inspection in this state as long as he/she:

- Is employed by the requesting company; and
- Has passed the written examination, and holds a certificate of competency as set forth in WAC 296-104-050.

The fee for the commission is twenty-five dollars. The commission shall be held at the home office of the employing company. Inspectors shall carry identifying commission cards while they are inspecting. A commission shall be valid for one year and may be renewed annually at the request of the employing company for a fee of ten dollars. The employing company shall return the commission and the identifying commission card at once to the chief inspector when the inspector to whom the commission was issued is no longer in its employ, or at the request of the chief inspector.

The department may suspend or revoke a certificate of competency and commission issued to an inspector upon ten days notice to the inspector and to the inspector's employer for:

- Incompetency or untrustworthiness;
- Willful falsification of any matter or statement contained in the application, or in the report of any inspection; or
- For other sufficient reason.

The holder of a certificate of competency is entitled to a hearing before the board prior to the revocation or suspension of the certificate of competency. A person whose commission has been suspended, except for untrustworthiness, may apply to the board for reinstatement. A person whose commission has been revoked, except for untrustworthiness, may apply to the board to take a new examination for a commission after ninety days from the date of the revocation.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-060, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040, 94-21-002, § 296-104-060, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.030 and 70.79.330, 82-24-025 (Order 82-36), § 296-104-060, filed 11/23/82, effective 1/1/83; Order 74-37, § 296-104-060, filed 11/8/74; Part II, § 9, filed 3/23/60.]

WAC 296-104-065 Administration—How should a certified or commissioned inspector obtain a Washington state commission? Upon the request of a boiler insurance company authorized to insure and insuring against loss from explosion of boilers and/or unfired pressure vessels in this state, or a company with an owner/user inspection agency, a commission as a special inspector of boilers and/or unfired pressure vessels shall be issued by the chief inspector to an inspector in the employ of such company provided the inspector has had the experience prescribed in RCW 70.79.130 and:

(1) Passed an examination covering the Washington state boilers and unfired pressure vessels law, chapters 70.79 RCW and 296-104 WAC; and

(2) Holds a certificate of competency or commission issued by a state which has adopted one or more sections of the ASME Code, or a national board commission, in either case having taken and passed a written examination equivalent to that required by the state of Washington; or

(3) Is certified by the American Petroleum Institute in accordance with API-510, having taken and passed a written examination equivalent to that required by the state of Washington.

Application for a reciprocal commission shall be made on a form to be furnished by the chief inspector, and shall be accompanied by a copy of the applicant's certificate of competency or a National Board Commission; or an API certificate and evidence of having passed the API examination.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-065, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-065, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040, 94-21-002, § 296-104-065, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.030, 78-03-057 (Order 78-3), § 296-104-065, filed 2/22/78; Order 74-37, § 296-104-065, filed 11/8/74; Part II, § 10, filed 3/23/60.]

WAC 296-104-100 Inspection—How often must boilers and unfired pressure vessels be inspected? (1) **Power boilers** shall be inspected:

(a) Internally and externally while not under pressure - Annually.

(b) Externally while under pressure - Annually.

(2) **Organic vapor boilers** shall be inspected:

(a) Internally and externally while not under pressure - Biennially.

(b) Externally while under pressure - Annually.

(3) **Low pressure heating boilers** shall be inspected:

(a) Externally while under pressure - Biennially.

(b) Internally while not under pressure (except where construction does not permit an internal) - Every 4th year.

(c) Internally, all steam heating boilers will have as a minimum, an internal of their low water fuel cutoff - Biennially.

(d) Internally, none required for nonvapor boilers using glycol, oil or adequately treated with a corrosion inhibitor.

(4) **Hot water heaters** shall be inspected:

(a) Externally - Biennially.

(b) Internally - None required.

(5) **Unfired pressure vessels** shall be inspected:

(a) Externally - Biennially.

(b) Internally:

(i) When subject to corrosion and construction permits - Biennially; or

(ii) Vessels in an owner/user inspection program may follow intervals established by the NBIC or API-510, provided nondestructive examination (NDE) is performed at the biennial external inspection; or

(iii) Pulp or paper dryer rolls may be inspected on a five-year basis in accordance with TAPPI TIS 0402-16, provided the owner has established a written inspection program accepted by the inspector that requires the minimums in section 8 of TAPPI TIS 0402-16; or

(iv) Vessels not subject to corrosion do not require an internal.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-100, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-100, filed 10/28/98, effective 11/28/98; 95-19-058, § 296-104-100, filed 9/15/95, effective 10/16/95. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-100, filed 10/5/94, effective 11/5/94; Part III, § 1, filed 3/23/60.]

WAC 296-104-102 Inspection—What are the standards for in-service inspection? (1) Where a conflict exists between the requirements of the standards listed below and this chapter, this chapter shall prevail.

(2) The standard for inspection of nonnuclear boilers, unfired pressure vessels, and safety devices is the National Board Inspection Code (NBIC), 1998 edition, with addenda. This code may be used on or after the date of issue and becomes mandatory twelve months after adoption by the board as specified in RCW 70.79.050(2).

(3) The standard for inspection of nuclear items is ASME section XI. The ASME Code edition and addenda shall be as specified in the owner in-service inspection program plan.

(4) Where a petroleum or chemical process industry owner/user inspection agency so chooses, the standard for inspection of unfired pressure vessels used by the owner shall be the API-510 Pressure Vessel Inspection Code, eighth edition, with supplements. This code may be used on or after the date of issue.

(5) TAPPI TIS 0402-16, dated 1995 may be used for both pulp dryers and paper machine dryers when requested by the owner. When requested by the owner, this document becomes a requirement and not a guideline.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-102, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-102, filed 10/28/98, effective 11/28/98; 96-21-081, § 296-104-102, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-102, filed 10/5/94, effective 11/5/94.]

WAC 296-104-105 Inspection—How much time is required for notification of inspection? Seven days will be considered sufficient notification. The owner or user shall prepare each boiler and unfired pressure vessel for internal inspection and shall prepare for and apply a hydrostatic pressure test whenever necessary on the date specified by the inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-105, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-105, filed 9/15/95, effective 10/16/95; Part III, § 2, filed 3/23/60.]

WAC 296-104-107 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-104-110 Inspection—What will be done when boilers or unfired pressure vessels are deemed unsafe or defective? Upon inspection of a boiler or unfired pressure vessel or appurtenances, if an inspector finds hazardous conditions such that it is unsafe to operate under pressure, remedial action shall be initiated at once. A red tag indicating "unsafe - do not use" shall be attached to the principle operating control and the owner or user advised that further

operation is prohibited until specified repairs or other action are taken. The chief inspector shall be notified immediately, followed by a report on the condition. Any certificate in force is considered suspended. When reinspection establishes that necessary repairs have been made or corrective action taken so that the boiler or unfired pressure vessel is safe to operate, a report of reinspection shall be submitted to the chief inspector. The certificate of inspection will then be reinstated or a new certificate issued as appropriate.

If other defects, but not unsafe conditions, are found, a routine inspection report containing a noncompliance report shall be submitted to the chief inspector. The owner or user shall be allowed to operate the object for a period as specified by the inspector so long as corrective action is completed in the allotted time.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-110, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-110, filed 9/15/95, effective 10/16/95; Part III, § 3, filed 3/23/60.]

WAC 296-104-115 Inspection—What will be done when defective conditions are concealed by covering? If upon an external inspection there is evidence of a leak or crack, enough of the covering of the boiler or unfired pressure vessel shall be removed to satisfy the inspector in order to determine the safety of the boiler or unfired pressure vessel. If the covering cannot be removed at the time, the inspector may order the operation of the boiler or unfired pressure vessel stopped until such time as the covering can be removed and proper examination made.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-115, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-115, filed 9/15/95, effective 10/16/95; Part III, § 4, filed 3/23/60.]

WAC 296-104-125 Inspection—Are certificate fees required? If upon inspection a boiler or unfired pressure vessel is found to be suitable for use and to conform to these rules and regulations, the owner or user shall pay certificate fees as scheduled in WAC 296-104-700 directly to the chief inspector. The inspection process is not complete until the certificate of inspection is posted.

If the owner or user of each boiler or unfired pressure vessel required to be inspected refuses to allow an inspection to be made, or refuses to pay the above fee, the certificate of inspection shall be suspended by the chief inspector until the owner or user complies with the requirements.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-125, filed 10/26/99, effective 11/26/99; Part III, § 6, filed 3/23/60.]

WAC 296-104-130 Inspection—When are inspection certificates valid? An inspection certificate, issued in accordance with RCW 70.79.290, shall be valid until expiration unless some defect or condition affecting the safety of the boiler or unfired pressure vessel is disclosed or the conditions of RCW 70.79.300 apply.

When an agreement exists between the state and the city jurisdictions of Spokane, Seattle or Tacoma, the certificates for portable boilers and unfired pressure vessels will be considered valid.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-130, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-130, filed 9/15/95, effective 10/16/95; Part III, § 7, filed 3/23/60.]

WAC 296-104-135 Inspection—What are the requirements for restamping of boilers and unfired pressure vessels? When the stamping on a boiler or unfired pressure vessel becomes indistinct the inspector shall instruct the owner or user to have it restamped. Request for permission to restamp the boiler or unfired pressure vessel shall be made to the chief inspector and proof of the original stamping shall accompany the request. Restamping authorized by the chief inspector shall be done only in the presence of an inspector, and shall be identical with the original stamping except that it will not be required to restamp the code symbol. Notice of completion of such restamping shall be filed with the chief boiler inspector by the inspector who witnessed the restamping of the boiler or unfired pressure vessel together with a facsimile of the stamping applied.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-135, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-135, filed 9/15/95, effective 10/16/95; Part III, § 8, filed 3/23/60.]

WAC 296-104-140 Inspection—How should a state stamp be applied? Upon completion of the installation, all boilers and unfired pressure vessels shall be inspected by the chief inspector, a deputy inspector, or a special inspector. At the time of this inspection, each boiler or unfired pressure vessel shall be marked with a serial number of the state of Washington followed by the letter "W."

Data sheets shall be made available at the time of first inspection if not filed with the national board.

Washington special numbers when assigned by the chief inspector shall be preceded by the letters "WS."

All rental boilers used in the state of Washington shall be marked with the serial number of the state of Washington followed by the letters "WR." This will indicate that the boiler is a rental unit.

The state of Washington markings, numbers and letters, referenced above, shall not be less than 5/16 inches in height and shall not be concealed by lagging or paint and shall be exposed at all times.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-140, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-140, filed 10/16/96, effective 11/16/96; 95-19-058, § 296-104-140, filed 9/15/95, effective 10/16/95; Order 73-1, § 296-104-140, filed 3/22/73; Part III, § 9, filed 3/23/60.]

WAC 296-104-145 Inspection—How are groups of vessels operating as a single unit classified? A group of unfired pressure vessels operating as a single unit such as the vessels in a refrigeration system, evaporators, ironers and paper machines may be given one number, designating the different vessels of the unit as a-b-c, etc. The inspector's report shall cover all pressure vessels in the system individually. One certificate shall be issued for the unit. Certificate charge shall be as outlined in RCW 70.79.290, for each vessel of the system.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-145, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-145, filed 9/15/95, effective 10/16/95; Part III, § 10, filed 3/23/60.]

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WAC 296-104-150 Inspection—How are unfired steam boilers classified? Unfired steam boilers operating at pressures of 50 psi or more shall be inspected as power boilers. Unfired steam boilers operating at less than 50 psi shall be inspected as unfired pressure vessels.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-150, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-150, filed 9/15/95, effective 10/16/95; Part III, § 11, filed 3/23/60.]

WAC 296-104-151 Inspection—What are the requirements for rental boilers? Every rental boiler used in the state of Washington will have an internal inspection completed once a year. An operating inspection under pressure shall be conducted by the chief inspector, a deputy inspector, or a special inspector at each and every rental location before being placed into service.

A rental boiler, which has never been in rental service in the state of Washington, will have a satisfactory hydrostatic test completed along with an initial internal inspection prior to having a state number issued. Each operating inspection will be reported to the state of Washington using the standard inspection form and a copy of this report will be posted on the rental boiler.

Inspections will be the responsibility of the rental boiler owner but may be completed by the user's special inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-151, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-151, filed 10/16/96, effective 11/16/96.]

WAC 296-104-155 Inspection—What preparations are necessary prior to internal inspections? The owner or user shall prepare a boiler for internal inspection in the following manner or as required by the inspector:

(1) Water shall be drawn off and the boiler thoroughly washed.

(2) All manhole and handhole plates and wash-out plugs and water column connections shall be removed, the furnace and combustion chambers thoroughly cooled and cleaned.

(3) All grates of internally fired boilers shall be removed.

(4) At each annual inspection brickwork shall be removed as required by the inspector in order to determine the condition of the boiler headers, furnace, supports, or other parts.

(5) The steam gauge shall be removed for testing or evidence of testing shown.

(6) Any leakage of steam or hot water into the boiler shall be cut off by disconnecting the pipe or valve at the most convenient point.

(7) The low water cutout shall be disassembled to such a degree as the inspector shall require.

Unfired pressure vessels shall be prepared for internal inspection to the extent deemed necessary by the inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-155, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-155, filed 9/15/95, effective 10/16/95; Part III, § 12, filed 3/23/60.]

WAC 296-104-160 Inspection—What happens if a boiler or unfired pressure vessel is improperly prepared for inspection? If a boiler or unfired pressure vessel has not been properly prepared for an internal inspection, or the

owner or user fails to comply with the requirements for hydrostatic test as set forth in these rules, the inspector may decline to make the inspection or test and the certificate of inspection shall be withheld until the owner or user complies with the requirements.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-160, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-160, filed 9/15/95, effective 10/16/95; Part III, § 13, filed 3/23/60.]

WAC 296-104-165 Inspection—When should coverings be removed for inspection? If the boiler or unfired pressure vessel is jacketed such that the longitudinal seams of shells, drums, or domes cannot be seen, or if pertinent information cannot be determined by other means, the following may be ordered by the inspector: Enough of the jacketing, setting wall, or other form of casing or housing shall be removed so that information necessary to determine the safety of the boiler or unfired pressure vessel can be obtained to the satisfaction of the inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-165, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-165, filed 9/15/95, effective 10/16/95; Part III, § 14, filed 3/23/60.]

WAC 296-104-170 Inspection—When are shop inspections required? Shop inspections shall be as required in the applicable sections of the ASME Code. Only inspectors holding a national board commission with the appropriate endorsements and a commission issued by the state of Washington shall make shop inspections in this state. Supervisors of inspectors who perform shop inspections in the state need only a National Board Commission with the appropriate endorsements.

Upon request from a boiler or pressure vessel manufacturer holding an ASME Certificate of Authorization within the jurisdiction, the department shall provide inspection services as required by the ASME Code. The manufacturer receiving such inspection services shall reimburse the department for the time and expenses in accordance with the fee schedule established in WAC 296-104-700.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-170, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-170, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040, 90-20-029, § 296-104-170, filed 9/24/90, effective 10/25/90. Statutory Authority: RCW 70.79.030, 78-03-057 (Order 78-3), § 296-104-170, filed 2/22/78; Part III, § 15, filed 3/23/60.]

WAC 296-104-285 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-104-502 Repairs—What are the requirements for nonnuclear boilers and unfired pressure vessel repairs and alterations? Repairs and alterations to nonnuclear boilers and pressure vessels shall be made in accordance with the rules of the National Board Inspection Code (NBIC) as adopted in WAC 296-104-102.

Repairs/alterations may be made by:

(1) An organization authorized by the jurisdiction and in possession of a valid Certificate of Authorization for use of the "R" symbol stamp, issued by the National Board provided

such repairs/alterations are within the scope of the authorization.

(2) An organization authorized by the chief inspector and in possession of a valid ASME Certificate of Authorization provided such repairs/alterations are within the scope of the organization's Quality Control System. The chief inspector may limit or restrict repairs/alterations for cause.

Owner/user special inspectors may only accept repairs/alterations to boilers and unfired pressure vessels operated by their respective companies per RCW 70.79.130.

Where required, record of welded repairs/alterations, signed by the organization and a commissioned inspector shall be submitted to the chief inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-502, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-502, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.040, 94-21-002, § 296-104-502, filed 10/5/94, effective 11/5/94.]

WAC 296-104-700 Inspection fees—Certificate fees—Expenses. The following fees shall be paid by, or on behalf of, the owner or user upon the completion of the inspection. The inspection fees apply to inspections made by inspectors employed by the state.

Heating boilers:	Internal	External
Cast iron—All sizes	27.05	21.65
All other boilers less than 500 sq. ft.	32.50	21.65
500 sq. ft. to 2500 sq. ft.	54.15	27.05
Each additional 2500 sq. ft. of total heating surface, or any portion thereof	21.65	10.80
Power boilers:	Internal	External
Less than 100 sq. ft.	27.05	21.65
100 sq. ft. to less than 500 sq. ft.	32.50	21.65
500 sq. ft. to 2500 sq. ft.	54.15	27.05
Each additional 2500 sq. ft. of total heating surface, or any portion thereof	21.65	10.80
Pressure vessels:		
Automatic utility hot water supply heaters per RCW 70.79.090		5.40
All other pressure vessels: Square feet shall be determined by multiplying the length of the shell by its diameter.		
Less than 15 sq. ft.	21.65	16.25
15 sq. ft. to less than 50 sq. ft.	32.50	16.25
50 sq. ft. to 100 sq. ft.	37.90	21.65
For each additional 100 sq. ft. or any portion thereof	10.80	37.90
Certificate of inspection fees: For objects inspected, the certificate of inspection fee is \$16.25 per object.		

Nonnuclear shop inspections, field construction inspections, and special inspection services:

For each hour or part of an hour up to 8 hours 32.50

For each hour or part of an hour in excess of 8 hours 48.75

Nuclear shop inspections, nuclear field construction inspections, and nuclear triennial shop survey and audit:

For each hour or part of an hour up to 8 hours 48.75

For each hour or part of an hour in excess of 8 hours 75.80

Nonnuclear triennial shop survey and audit: When state is authorized inspection agency:

For each hour or part of an hour up to 8 hours 32.50

For each hour or part of an hour in excess of 8 hours 48.75

When insurance company is authorized inspection agency:

For each hour or part of an hour up to 8 hours 48.75

For each hour or part of an hour in excess of 8 hours 75.80

Expenses shall include:

Travel time and mileage: The department shall charge for its inspectors' travel time from their offices to the inspection sites and return. The travel time shall be charged for at the same rate as that for the inspection, audit, or survey. The department shall also charge the current Washington office of financial management accepted mileage cost fees or the actual cost of purchased transportation. Hotel and meals: Actual cost not to exceed the office of financial management approved rate.

Reinspection fee: Same as the fee for the previous inspection during which discrepancies were reported. The fee will be charged only if the discrepancies are not corrected before the reinspection. The fee shall not exceed \$ 26.00. Washington state specials: For each vessel to be considered by the board for a Washington state special certificate, a fee of \$300.00 must be paid to the department before the board meets to consider the vessel. The board may, at its discretion, prorate the fee when a number of vessels that are essentially the same are to be considered.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-08-049, § 296-104-700, filed 4/1/99, effective 5/2/99; 98-09-064, § 296-104-700, filed 4/20/98, effective 5/21/98. Statutory Authority: RCW 70.79.040, 93-12-014, § 296-104-700, filed 5/21/93, effective 6/21/93. Statutory Authority: RCW 70.79.030 and 70.79.330, 84-21-012 (Order 84-20), § 296-104-700, filed 10/5/84; 84-11-016 (Order 84-09), § 296-104-700, filed 5/10/84; 82-24-025 (Order 82-36), § 296-104-700, filed 11/23/82, effective 1/1/83; Order

77-23, § 296-104-700, filed 11/8/77; Emergency Order 77-22, § 296-104-700, filed 11/8/77.]

Chapter 296-125 WAC

NONAGRICULTURAL EMPLOYMENT OF MINORS

WAC

296-125-019 Repealed.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-125-019 Prerequisites to employing minors. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060, 93-01-068, § 296-125-019, filed 12/11/92, effective 3/1/93.] Repealed by 99-15-071, filed 7/19/99, effective 8/19/99. Statutory Authority: Chapter 49.12 RCW.

WAC 296-125-019 Repealed. See Disposition Table at beginning of this chapter.

Chapter 296-150C WAC

COMMERCIAL COACHES

WAC

- 296-150C-0020 What definitions apply to this chapter?
- 296-150C-0140 Do you allow the use of alternate materials, alternate design and method of construction?
- 296-150C-0320 What must I provide with my request for commercial coach design-plan approval by the department?
- 296-150C-0330 Repealed.
- 296-150C-0410 When does my design plan expire?
- 296-150C-0500 When is an inspection required?
- 296-150C-0805 Are there any special requirements for portable school classrooms?
- 296-150C-0810 Construction definitions.
- 296-150C-0960 What requirements apply to commercial coach roof trusses?
- 296-150C-1080 What design and construction requirements apply to a commercial coach chassis?
- 296-150C-1345 May the electrical disconnect required for mechanical equipment be inside of or mounted on the equipment?
- 296-150C-1545 Does the department require a water system expansion tank be installed?
- 296-150C-1580 Repealed.
- 296-150C-1590 Repealed.
- 296-150C-1600 Repealed.
- 296-150C-1610 Repealed.
- 296-150C-1620 Repealed.
- 296-150C-1630 Repealed.
- 296-150C-1640 Repealed.
- 296-150C-1650 Repealed.
- 296-150C-1660 Repealed.
- 296-150C-1670 Repealed.
- 296-150C-1680 Repealed.
- 296-150C-1690 Repealed.
- 296-150C-1700 Repealed.
- 296-150C-1710 Repealed.
- 296-150C-1720 Repealed.
- 296-150C-1730 Repealed.
- 296-150C-1740 Repealed.
- 296-150C-1750 Repealed.
- 296-150C-1751 Repealed.
- 296-150C-1752 Repealed.
- 296-150C-1753 Repealed.
- 296-150C-1754 Repealed.
- 296-150C-1755 Repealed.
- 296-150C-1756 Repealed.
- 296-150C-1757 Repealed.
- 296-150C-1758 Repealed.
- 296-150C-1759 Repealed.
- 296-150C-1760 Repealed.
- 296-150C-1770 Repealed.
- 296-150C-1780 Repealed.
- 296-150C-1790 Repealed.

296-150C-1800 Repealed.
 296-150C-1810 Repealed.
 296-150C-1820 Repealed.
 296-150C-1830 Repealed.
 296-150C-3000 Commercial coach fees.

**DISPOSITION OF SECTIONS FORMERLY
 CODIFIED IN THIS CHAPTER**

- 296-150C-0330 What must I provide with my request for a commercial coach vendor unit design-plan approval by the department? [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0330, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1580 What manufacturing codes apply when converting structures to vendor units? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1580, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1580, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1590 Is a structural analysis required when converting a vehicle or structure to a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1590, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1590, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1600 What are the live load requirements of a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1600, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1600, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1610 Design load deflection. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1610, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1620 Structural load tests. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1620, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1630 Roof coverings/membrane/ weather resistant. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1630, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1640 Floors. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1640, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1650 Floor closure material. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1650, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1660 Chassis approval. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1660, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1670 Standards for equipment and installations. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1670, filed 10/23/96, effective 11/25/96.]
- 296-150C-1680 Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1680 Flame-spread limitations. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1680, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1690 Cabinet protection. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1690, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1700 Insulation standards. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1700, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1710 Light and ventilation. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1710, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1720 What requirements apply to vending unit exits? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1720, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1720, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1730 What code and installation requirements apply to vendor unit electrical systems? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1730, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1730, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1740 What are the mechanical requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1740, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1740, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1750 What are the LPG system enclosure and mounting requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1750, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1751 What are the fuel gas piping design requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1751, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1752 Can gas tubing be concealed in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1752, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1753 What are the pipe-joint compound requirements for gas piping in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1753, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1754 What are the gas piping hanger and support requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1754, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1755 What are the electrical bonding requirements for gas piping in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1755, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188,

- filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1756 How are gas supply connections in a vendor unit identified? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1756, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1757 What requirements apply to gas piping system openings? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1757, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1758 Are gas piping shut-off valves required in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1758, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1759 What requirements apply to testing for gas piping leaks before vendor unit appliances are connected? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1759, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1760 What requirements apply to testing for gas piping leaks after vendor unit appliances are connected? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1760, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1770 Appliances—Installation. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1770, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1780 Safety devices—Water heater relief valves. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1780, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1790 Plumbing—General. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1790, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1800 Plumbing—Definitions. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1800, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1810 Drainage—Cap or plug. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1810, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1820 Drainage—Clearance from drain outlet. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1820, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1830 Water supply connection. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1830, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

WAC 296-150C-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or installation that affects the construction, fire and life safety, or the plumbing, mechanical, and electrical systems of a commercial coach.

The following are not considered alterations:

- Repairs with approved parts;

- Modification of a fuel-burning appliance according to the listing agency's specifications; or
- Adjustment and maintenance of equipment.

"Approved" is approved by the department of labor and industries.

"Building site" is a tract, parcel, or subdivision of land on which a commercial coach will be installed.

"Consumer" is a person or organization, excluding a manufacturer or dealer of commercial coaches, who buys or leases a commercial coach.

"Commercial coach" is a structure (referred to as a unit) that:

- Can be transported in one or more sections;
- Is used for temporary commercial purposes;
- Is built on a permanent chassis;
- Conforms to the construction standards of this chapter;
- May include plumbing, mechanical, electrical and other systems.

Note: A commercial coach may not be used as a single-family dwelling. A commercial coach does not have to be placed on a permanent foundation.

"Damaged in transit" means damage that affects the integrity of a structural design or any of the systems.

"Dealer" is a person, company, or corporation whose business is leasing, selling, offering for lease or sale, buying, or trading commercial coaches.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

"Design plan" is a plan for the construction or alteration of a commercial coach or conversion of a vehicle to a commercial coach including floor plans, elevation drawings, specifications, engineering data, or test results necessary for a complete evaluation of the design.

"Design option" is a design that a manufacturer may use as an option to its commercial coach design plan.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, conversion to, or alteration of a commercial coach.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to commercial coaches. (See RCW 43.22.420.)

"Insignia" is a label that we attach to a commercial coach to verify that the structure meets the requirements of this chapter and the applicable codes.

"Install" is to erect, construct, assemble, or set a commercial coach in place.

"Labeled" is to bear the department's insignia.

"Listed" is a piece of equipment or apparatus that has been approved by a testing agency to the appropriate standard.

"Local enforcement agency" is an agency of city or county government with power to enforce local regulations governing the installation of a commercial coach.

"**Master design plan**" is a design plan that expires when a new state building code has been adopted.

"**One-year design plan**" is a design plan that expires one year after approval or when a new state building code has been adopted.

"**System**" is part of a commercial coach designed to serve a particular function. Examples include structural, plumbing, electrical, or mechanical systems.

[Statutory Authority: RCW 43.22.480. 00-01-187, § 296-150C-0020, filed 12/22/99, effective 2/8/00. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0020, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

(a) The applicant's name, address and phone number;

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advise.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150C-0100.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0140, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-0320 What must I provide with my request for commercial coach design-plan approval by the department? All requests for design-plan approval must include:

(1) A completed design-plan approval request form;

(2) Two sets of design plans plus elevation drawings, specifications, engineering analysis, and test results and procedures necessary for a complete evaluation of the design; (See WAC 296-150C-0340 and 296-150C-0350.)

(3) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under his or her direct supervision shall be signed, dated and stamped with their seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed by them and they shall prepare a report concerning the plans reviewed. This report shall:

(a) Identify which drawings have been reviewed by drawing number and date;

(b) Include a statement that the plans are in compliance with current Washington state regulations; and

(c) The report shall be stamped and signed by the reviewer.

Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp;

(4) Receipt of a one-time initial design plan filing fee and the initial design plan fee (see WAC 296-150C-3000);

(5) A "key drawing" to show the arrangement of modules if the plan covers three or more modules;

(6) The occupancy class of the commercial coach according to the occupancy classifications in The Uniform Building Code;

(7) All plans required by WAC 296-46-140 (Plan review for educational, institutional or health care facilities and other buildings) must be reviewed by the department. The department's fee for this plan review is listed in the fee table in WAC 296-150C-3000, Commercial coach fees.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0320, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0320, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0320, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0330 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-0410 When does my design plan expire? *Commercial Coach - Master Design Plan:*

(1) Your commercial coach master design plan expires when there is a code change. You must submit new design plans for approval when there is a state building code cycle change. You may use your approved master design plans to order insignia as long as they comply with the applicable codes.

Commercial Coach - One-Year Design Plan:

(2) Your commercial coach one-year design plan expires either one year after approval or when there is a code change. You must submit new design plans for approval when there is a state building code cycle change. You may use your design plans to order insignia as long as they comply with the applicable codes.

(3) All National Electrical Code amendments may be incorporated by an addendum to your design plan.

Note: The State Building Code is on a three-year code cycle which coincides with the State Building Code Council amendment cycle. The National Electrical Code (NEC) cycle, however, does not coincide with the other code cycles.

[Statutory Authority: RCW 43.22.480. 00-01-187, § 296-150C-0410, filed 12/22/99, effective 2/8/00. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0410, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0410, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0500 When is an inspection required? (1) Before we issue an insignia, each unit manufactured or converted must be inspected as many times as required to show compliance with this chapter.

Note: Each commercial coach must have a serial number so we can track inspections.

(2) Before we issue an insignia, each commercial coach must be inspected at the manufacturing location as many times as required. Inspections may include but are not limited to:

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems are covered;

(b) Insulation and vapor barrier inspection, if required; and

(c) A final inspection after the commercial coach is complete.

(3) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(4) If a commercial coach is damaged in transit to the building site or during on-site installation, it must be inspected. This is considered an alteration inspection. (See WAC 296-150C-0240.)

(5) Approved design plans must be available in compliance with the applicable sections of the adopted state codes.

(6) Once your unit is inspected and approved we will attach the insignia.

[Statutory Authority: RCW 43.22.480. 00-01-187, § 296-150C-0500, filed 12/22/99, effective 2/8/00. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0500, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0500, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0805 Are there any special requirements for portable school classrooms? In addition to the requirements in this chapter, the department of health has rules regulating primary and secondary schools in chapter 246-366 WAC. One of those requirements in WAC 246-366-

050(2) is that "Instructional areas shall have a minimum average ceiling height of 8 feet."

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0805, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-0810 Construction definitions. The following definitions and the definitions in each of the state codes adopted in WAC 296-150C-0800 apply to commercial coach construction.

"Anchoring system" is the means used to secure a commercial coach to ground anchors or to other approved fastening devices. It may include straps, cables, turnbuckles, bolts, fasteners, or other components.

"Ceiling height" is the clear vertical distance from the finished floor to the finished ceiling.

"Chassis" means that portion of the transportation system comprised of the following: Drawbar coupling mechanism and frame.

EXCEPTION: The running gear assembly shall not be considered as part of the chassis.

"Dead load" is the vertical load resulting from the weight of all permanent structural and nonstructural parts of a commercial coach including walls, floors, roof, partitions, and fixed service equipment.

"Diagonal tie" is a tie intended primarily to resist horizontal or shear forces and secondarily may resist vertical, uplift, and overturning forces.

"Dormitory" is a room designed to be occupied by more than two persons.

"Exit" is a continuous and unobstructed means of egress to a public way.

"Frame" means the fabricated rigid substructure, which provides support to the affixed commercial coach structure both during transport and onsite. It is considered a part of the commercial coach.

"Glazed opening" is a glazed skylight or an exterior window or glazing of a door of a commercial coach.

"Gross floor area" is the net floor area within the enclosing walls of a room where the ceiling is at least five feet high.

"Habitable room" is a room or enclosed floor space arranged for living, eating, food preparation, or dormitory sleeping purposes. It does not include bathrooms, toilet compartments, foyers, hallways, or other accessory floor spaces. Any reference to "habitable dwelling" in this chapter means a temporary structure not used as a single family dwelling.

"Interior finish" is the surface material of walls, fixed or movable partitions, ceilings and other exposed interior surfaces affixed to the commercial coach structure, including paint and wallpaper. Decorations or furnishings attached to the commercial coach structure are considered part of the interior finish.

"Live load" is the weight superimposed by the use and occupancy of the commercial coach, including wind load and snow load, but not including dead load.

"Perimeter blocking" is support placed under exterior walls.

"Shear wall" is a wall designed and constructed to transfer lateral loads.

"Tiedown" is a device designed to anchor a commercial coach to ground anchors.

"Use" or "occupancy classification" is the designed purpose of a commercial coach according to The Uniform Building Code.

"Wind load" is the lateral or vertical pressure or uplift created by wind blowing in any direction.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0810, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0810, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0960 What requirements apply to commercial coach roof trusses? (1) The construction of roof trusses must be approved by a professional engineer. Roof trusses may be produced by one of the following methods:

(a) Use of graded materials when an approved testing agency certifies truss construction and load requirements are met; the testing agency must prepare an approved quality control program which allows them to test the trusses with appropriate testing procedures.

(b) Use of nongraded materials, if each truss is tested in an approved testing jig at the manufacturer's site with a load equivalent to full design load (1.75 times the full design load sustained for 12 hours). See WAC 296-150C-0930.

(2)(a) Representative trusses must be tested from the production line, when we request. The approved testing agency or engineer must submit the testing report to us.

(b) All test reports are to be stamped, signed, and dated by the approved testing agency or engineer who performs the test.

(c) These tests must not occur more than two times a year per design unless there are problems with the roof trusses.

(d) The manufacturer is required to maintain an acceptable quality level not exceeding one percent using acceptable sampling procedures.

Note: The acceptable quality level is defined as the maximum allowable percentage of defective units.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0960, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0960, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0960, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1080 What design and construction requirements apply to a commercial coach chassis? Each commercial coach chassis must be designed and constructed to be capable of:

(1) Effectively sustaining the design loads consisting of the dead load plus five PSF load on the floor and the superimposed dynamic load resulting from highway movement, in no case shall the dynamic load be required to exceed twice the dead load; and

(2) Accepting the shock and vibration from the roadway and towing vehicle through the use of adequate running gear assemblies.

(3) In the set up mode, the commercial coach must be designed to accommodate a fifty PSF floor load.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-1080, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1080, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1080, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1345 May the electrical disconnect required for mechanical equipment be inside of or mounted on the equipment? The electrical disconnect shall not be inside of or mounted on the equipment.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-1345, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-1545 Does the department require a water system expansion tank be installed? The department will only require that a tee be installed in an accessible location for the future addition of an expansion tank where one may be installed if required.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-1545, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-1580 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1590 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1600 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1610 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1620 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1630 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1640 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1650 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1660 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1670 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1680 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1690 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1700 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1710 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1720 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1730 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1740 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1750 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1751 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1752 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1753 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1754 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1755 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1756 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1757 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1758 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1759 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1760 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1770 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1780 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1790 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1800 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1810 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1820 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-1830 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150C-3000 Commercial coach fees.

WAC 296-150C-3000 COMMERCIAL COACH FEES	
INITIAL FILING FEE	\$28.00
DESIGN PLAN FEES:	
INITIAL FEE - MASTER DESIGN	\$192.00
INITIAL FEE - ONE YEAR DESIGN	\$78.75
RENEWAL FEE	\$33.75
RESUBMIT FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan)	\$56.25
ELECTRICAL PLAN REVIEW (When required by WAC 296-46-140, Plan review for educational, institutional or health care facilities and other buildings)	
Electrical Plan submission fee	\$56.25
Service/feeder Ampacity:	
0 - 100	\$25.00
101 - 200	\$31.25
201 - 400	\$58.25
401 - 600	\$68.75
601 - 800	\$88.50
801 - 1000	\$108.25
Over 1000	\$117.50
Over 600 volts surcharge	\$18.75
Thermostats:	
First	\$11.25
Each additional	\$3.00
Low voltage fire alarm and burglar alarm:	
Each control panel and up to four circuits or zones	\$10.25
Each additional circuit or zone	\$2.00
Generators, refer to appropriate service/feeder ampacity fees	
<i>Note: Altered services or feeders shall be charged the above rate per the service/feeder ampacity fees.</i>	
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) shall be charged per hour or fraction of an hour*	\$66.50
MEDICAL GAS PLAN REVIEW:	
SUBMISSION FEE	\$54.00
FIRST STATION	\$54.00
EACH ADDITIONAL STATION	\$20.00
RECIPROCAL PLAN REVIEW:	
INITIAL FEE-MASTER DESIGN	\$85.75
INITIAL FEE-ONE YEAR DESIGN	\$52.00
RENEWAL FEE	\$52.00
ADDENDUM	\$52.00
PLANS APPROVED BY PROFESSIONALS	\$39.25
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$10.75

WAC 296-150C-3000 COMMERCIAL COACH FEES	
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$56.25
TRAVEL (Per hour)*	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR****	
PARKING****	
AIRFARE****	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$56.25
TRAVEL (Per hour*)	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR****	
PARKING****	
AIRFARE****	
INSIGNIA FEES:	
FIRST SECTION	\$16.50
EACH ADDITIONAL SECTION	\$10.75
ALTERATION	\$28.00
REISSUED-LOST/DAMAGED	\$10.75
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$56.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free copy per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments	
** Per state guidelines	
*** Actual charges incurred	

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150C-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150C-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 70.87.030, 18.27.070, [18.27.]075, 43.22.350, [43.22.]355, [43.22.]434 and [43.22.]480(2). 97-11-053, § 296-150C-3000, filed 5/20/97, effective 6/30/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-3000, filed 10/23/96, effective 11/25/96.]

Chapter 296-150F WAC

FACTORY-BUILT HOUSING AND COMMERCIAL STRUCTURES

WAC

296-150F-0050	Can you prohibit the installation of factory-built housing and commercial structures?
296-150F-0140	Do you allow the use of alternate materials, alternate design and method of construction?
296-150F-0320	What must I provide with my request for design-plan approval by the department?
296-150F-0605	May the required toilet facilities be located in an adjacent building?
296-150F-0610	Do you require the exit doors to be one-half the diagonal distance apart if each area served has its own exit door?
296-150F-0615	May the electrical disconnect required for mechanical equipment be inside of or mounted on the equipment?
296-150F-0620	Does the department require a water system expansion tank be installed?
296-150F-0625	Are there any special requirements for portable school classrooms?

[2000 WAC Supp—page 1378]

296-150F-3000 Factory-built housing and commercial structure fees.

WAC 296-150F-0050 Can you prohibit the installation of factory-built housing and commercial structures?

(1) We may prohibit the installation of factory-built housing and commercial structures if they do not conform to the requirements of this chapter. (See RCW 43.22.465.)

(2) If an inspection reveals that a factory-built home or commercial structure violates this chapter, we may obtain a temporary injunction enjoining the installation of any non-conforming structure. The injunction may be made permanent at the discretion of the court.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0050, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

(a) The applicant's name, address and phone number;

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150F-0100.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0140, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0320 What must I provide with my request for design-plan approval by the department? All requests for design-plan approval must include:

(1) A completed design-plan approval request form;

(2) One complete set of design plans, specifications, engineering analysis, test procedures and results plus one additional set for each manufacturing location where the design plan will be used (see WAC 296-150F-0340 and 296-150F-0350);

(3) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under his or her direct supervision shall be signed, dated and stamped with their seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed by them and they shall prepare a report concerning the plans reviewed. This report shall:

(a) Identify which drawings have been reviewed by drawing number and date;

(b) Include a statement that the plans are in compliance with current Washington state regulations; and

(c) The report shall be stamped and signed by the reviewer.

Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the

report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp;

(4) A one-time initial filing fee and the design-plan fee (see WAC 296-150F-3000); and

(5) A "key drawing" to show the arrangement of modules if the plan covers three or more modules.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0320, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0320, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0605 May the required toilet facilities be located in an adjacent building? Under the following conditions, the department will allow the required toilet facilities to be located in adjacent building(s):

(1) The manufacturer shall note in the plan submittal that the requirements of UBC Chapter 29, Section 2902 and Table 29-A, as amended by the state building code must be verified by the building official; and

(2) A Notification to Local Enforcement Agency (NLEA) must accompany each unit so that the requirements of UBC Chapter 29, Section 2902 and Table 29-A as amended by the state building code can be verified by the building official.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0605, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0610 Do you require the exit doors to be one-half the diagonal distance apart if each area served has its own exit door? If the area served has an occupant load requiring only one exit and a building contains more than one area where each area is served by individual exits, and a personnel door is added between adjoining rooms, a personnel door in the partition wall will not be construed to create a larger area served. The exits will not be required to be one-half of the diagonal apart.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0610, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0615 May the electrical disconnect required for mechanical equipment be inside of or mounted on the equipment? The electrical disconnect shall not be inside of or mounted on the equipment.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0615, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0620 Does the department require a water system expansion tank be installed? The department will only require that a tee be installed in an accessible location for the future addition of an expansion tank where one may be installed if required.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0620, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0625 Are there any special requirements for portable school classrooms? In addition to the requirements in the state building code, the department of

health has rules regulating primary and secondary schools in chapter 246-366 WAC. One of those requirements is that "Instructional areas shall have a minimum average ceiling height of 8 feet."

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0625, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-3000 Factory-built housing and commercial structure fees.

WAC 296-150F-3000 FACTORY-BUILT HOUSING AND COMMERCIAL STRUCTURES	
INITIAL FILING FEE	\$39.25
DESIGN PLAN FEES:	
INITIAL FEE - MASTER DESIGN (CODE CYCLE)	\$192.00
INITIAL FEE - ONE YEAR DESIGN	\$112.75
RENEWAL FEE	\$39.25
RESUBMIT FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan.)	\$56.25
ELECTRICAL PLAN REVIEW (When required by WAC 296-46-140, Plan review for educational, institutional or health care facilities and other buildings):	
Electrical Plan submission fee	\$56.25
Service/feeder Ampacity:	
0 - 100	\$25.00
101 - 200	\$31.25
201 - 400	\$58.25
401 - 600	\$68.75
601 - 800	\$88.50
801 - 1000	\$108.25
Over 1000	\$117.50
Over 600 volts surcharge	\$18.75
Thermostats:	
First	\$11.25
Each additional	\$3.00
Low voltage fire alarm and burglar alarm:	
Each control panel and up to four circuits or zones	\$10.25
Each additional circuit or zone	\$2.00
Generators, refer to appropriate service/feeder ampacity fees	
<i>Note: Altered services or feeders shall be charged the above rate per the service/feeder ampacity fees.</i>	
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) will be charged per hour or fraction of an hour*	\$66.50
MEDICAL GAS PLAN REVIEW:	
SUBMISSION FEE	\$54.00
FIRST STATION	\$54.00
EACH ADDITIONAL STATION	\$20.00
RECIPROCAL PLAN REVIEW:	
INITIAL FEE-MASTER DESIGN	\$85.75
INITIAL FEE-ONE YEAR DESIGN	\$52.00
RENEWAL FEE	\$52.00
ADDENDUM	\$52.00
PLANS APPROVED BY PROFESSIONALS	\$39.25
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$10.75

WAC 296-150F-3000 FACTORY-BUILT HOUSING AND COMMERCIAL STRUCTURE FEES	
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$56.25
TRAVEL (Per hour*)	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$56.25
TRAVEL (Per hour*)	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
FIRST SECTION	\$158.00
EACH ADDITIONAL SECTION	\$15.50
REISSUED-LOST/DAMAGED	\$39.25
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$56.25
NOTIFICATION TO LOCAL ENFORCEMENT AGENCY (NLEA)	\$23.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free copy per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150F-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150F-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 70.87.030, 18.27.070, [18.27.]075, 43.22.350, [43.22.]355, [43.22.]434 and [43.22.]480(2). 97-11-053, § 296-150F-3000, filed 5/20/97, effective 6/30/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-3000, filed 10/23/96, effective 11/25/96.]

**Chapter 296-150M WAC
MANUFACTURED HOMES**

WAC

- 296-150M-0020 What definitions apply to this chapter?
- 296-150M-0120 Where can I obtain technical assistance regarding manufactured (mobile) homes?
- 296-150M-0140 Do you allow the use of alternate materials, alternate design and method of construction?
- 296-150M-0306 What codes are used when altering a manufactured (mobile) home?
- 296-150M-0309 How do I apply for alteration approval and obtain an alteration insignia?
- 296-150M-0400 Repealed.
- 296-150M-0600 Who establishes standards for installation of manufactured homes?
- 296-150M-0610 What instructions are used for a manufactured home installation?
- 296-150M-0614 How may I obtain a copy of the American National Standards Institute (ANSI) A225.1-Manufactured Homes Installation?
- 296-150M-0615 What are the requirements for temporary placement of manufactured (mobile) homes?

- 296-150M-0640 Does a person who installs a manufactured home need an installation permit?
- 296-150M-0655 How does the local enforcement agency gain access to the manufacturer's installation instructions?
- 296-150M-3000 Manufactured home fees.

**DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER**

- 296-150M-0400 How do I apply for alteration approval and obtain an alteration insignia? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0400, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0400, filed 10/23/96, effective 11/25/96.] Repealed by 99-13-010, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340 and 43.22.480.

WAC 296-150M-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or installation that affects the construction, planning considerations, fire safety, or the plumbing, mechanical, and electrical systems of a manufactured home. The installation of whole-house water treatment equipment that requires cutting into the existing plumbing is considered an alteration and requires a permit, an inspection and an alteration insignia.

- The following are not considered alterations:
- Repairs to equipment with approved parts; or

- Modification of a fuel-burning appliance according to the listing agency's specifications; or
- Adjustment and maintenance of equipment.

"**Alteration insignia**" is an insignia issued by the department of labor and industries to verify that an alteration to a manufactured home meets the requirements of federal law 24 CFR 3280 and this chapter.

"**Anchoring system**" is the means used to secure a mobile home to ground anchors or to other approved fastening devices. It may include straps, cables, turnbuckles, bolts, fasteners, and other components.

"**ANSI**" is the American National Standards Institute, Inc., and the institute's rules applicable to manufactured homes, ANSI A225.1 Manufactured Homes Installation, 1994 edition, except section 3.5.2 - Ground Cover and section 4.1.3.3 - Clearance.

"**Authority having jurisdiction**" means that either the department of labor and industries or the local jurisdiction is responsible for establishing specific manufactured home standards. The authority for specific manufactured home standards is divided as follows:

- The department of labor and industries establishes standards for manufactured home installation and alterations and performs alteration inspections;
- The local jurisdiction establishes standards for manufactured homes governing the building site and performs installation inspections.

"**Building site**" is a tract, parcel, or subdivision of land on which a manufactured home is installed.

"**DAPIA**" is a Design Approval Primary Inspection Agency as approved by the United States Department of Housing and Urban Development.

"**Department**" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

"**Design plan**" is a design submitted to the department for approval of a manufactured home structural alteration.

"**Equipment**" is all material, appliances, devices, fixtures, fittings, or accessories used in the alteration or installation of a manufactured home.

"**Equivalent air conditioning/heat pump components**" is equipment that performs the same function and is compatible with the equipment of another manufacturer, sometimes referred to as mix and match.

"**Footing**" is the portion of a support system that transmits loads from the manufactured home to the ground.

"**Foundation skirting**" or "**skirting**" is the material that surrounds and encloses the space under the manufactured home.

"**Homeowner**" is an individual who owns a manufactured home. Dealers, distributors, and developers are not regarded as homeowners.

"**HUD**" is the United States Department of Housing and Urban Development with headquarters located in Washington, D.C.

"**Installation**" is the activity needed to prepare a building site and to set a manufactured home within that site. Site

means a tract, parcel, or subdivision of land including a mobile home park.

"**IPIA**" is a manufactured home production Inspection Primary Inspection Agency approved by the United States Department of Housing and Urban Development. The department of labor and industries is the IPIA for Washington state.

"**Local enforcement agency**" is an agency of city or county government with power to enforce local regulations governing the building site and installation of a manufactured home.

"**Manufactured home**" is a single-family dwelling built according to the Department of Housing and Urban Development Manufactured Home Construction and Safety Standards Act, which is a national, preemptive building code. A manufactured home also:

- Includes plumbing, heating, air conditioning, and electrical systems;
- Is built on a permanent chassis; and
- Can be transported in one or more sections with each section at least eight feet wide and forty feet long when transported; or when installed on the site is three hundred twenty square feet or greater (see RCW 46.04.302).

Note: Total square feet is based on exterior dimensions measured after installation using the longest horizontal projections. Dimensions may not include bay windows but may include projections containing interior space such as cabinets and expandable rooms.

Exception: A structure that meets the requirements of a manufactured home as set out in 24 CFR 3282.7(u), except the size requirements is considered a manufactured home, if the manufacturer files with the secretary of HUD a certificate noted in CFR 3282.13.

"**Mobile home**" is a factory-built dwelling built prior to June 15, 1976, to standards other than the HUD Code, and acceptable under applicable state codes in effect at the time of construction or introduction of the home into the state. Mobile homes have not been built since the introduction of the HUD Manufactured Home Construction and Safety Standards Act. For the purposes of this chapter references to manufactured homes include mobile homes.

"**Park site**" is the installation location of a manufactured home within a residential area for manufactured homes.

"**Structural alteration-custom design**" is a design that can only be used once.

"**Structural alteration-master design**" is a design plan that can be used more than once. The master plan expires when there is a code change applicable to the design.

"**System**" is part of a manufactured home designed to serve a particular function such as structural, plumbing, mechanical, or electrical functions.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0020, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0020, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0120 Where can I obtain technical assistance regarding manufactured (mobile) homes? We provide field technical service on manufactured (mobile) homes for an hourly fee. Field technical service may include an evaluation, consultation, plan examination, interpretation,

and clarification of technical data relating to the application of our rules.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0120, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

(a) The applicant's name, address and phone number;

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150M-0100.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0140, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0306 What codes are used when altering a manufactured (mobile) home? Alterations to a manufactured (mobile) home must be in compliance with the Manufactured Home Construction and Safety Standards, Part 24, CFR 3280, as adopted by the Secretary for the Department of Housing and Urban Development (HUD) and the amendments to that federal standard adopted in this WAC chapter.

(1) The department will accept equivalent air conditioning/heat pump components that have been tested and listed for use with a particular furnace by a nationally recognized testing laboratory.

(2) The department will accept pellet stoves for installation that have been listed by a department approved testing

laboratory. For a current list of approved laboratories, contact any department field office or the department at the address shown in WAC 296-150M-0020.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0306, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0306, filed 6/30/98, effective 7/31/98.]

WAC 296-150M-0309 How do I apply for alteration approval and obtain an alteration insignia? (1) To apply for alteration approval and the alteration insignia, you must:

(a) Complete an alteration permit form and an application for alteration insignia. We will provide the forms upon request.

(b) Submit the completed forms to us, with the first hour of inspection fee and alteration insignia fee. Alterations requiring more than one inspection shall have the first hour inspection fee paid to the department prior to any inspection. (See WAC 296-150M-3000.)

(2) Request inspection of your alteration at least five days before the date you want the inspection.

(3) Once we approve your alteration, we will attach the alteration insignia to your manufactured home.

Note: Specifications, engineering data, and test results should be available for our inspector. If applicable, your approved design plan must also be available during the inspection.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0309, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0400 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-150M-0600 Who establishes standards for installation of manufactured homes? (1) The director of labor and industries is responsible for establishing uniform installation standards where possible and practical for persons or entities engaged in performing the installation of manufactured homes within the state.

(2) Local jurisdictions may adopt additional installation requirements only for those installation situations not covered by federal standards. For example, local jurisdictions may impose noise control construction ordinances, prescribe the frost depth and soil bearing capacity at the installation site, and adopt requirements to protect manufactured homes in hazardous areas, (see WAC 296-150M-0620).

Also, local jurisdictions may impose their requirements for snow and wind loads as long as all structures within their jurisdiction are required to comply with the same standard and provided those installing the manufactured home are given options in satisfying that standard. Such an option might include, but not be limited to, allowing an installer to erect an additional structure, which meets local standards, and protects the manufactured home. For example, an installer could erect a free standing ramada over a manufactured home to protect it from local snow loads.

Local jurisdictions may not:

(a) Dictate foundation design and construction which is built according to either the manufacturer's installation instructions or a design created by an engineer or architect licensed in Washington state.

(b) Impose regulations on smoke detectors because they are regulated by federal standards.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0600, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0600, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0600, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0610 What instructions are used for a manufactured home installation? To the extent that the installation of a manufactured home is not covered by a manufacturer's, engineer's or architect's instructions, the manufactured home shall comply with the installation requirements of this section.

(1) Installation of a new manufactured home.

(a) The initial manufactured home installation must be conducted according to the manufacturer's instructions.

(b) If the manufacturer's instructions do not address an aspect of the installation, you may request:

(i) Specific instructions from the manufacturer; or

(ii) Specific instructions from a professional engineer or architect licensed in Washington state.

For example:

(A) A manufactured home is installed over a basement and the manufacturer's instructions do not address this application;

(B) A manufactured home is installed on a site where the specific soil bearing capacity is not addressed in the manufacturer's instructions.

(c) All manufactured homes installed in Washington state must be permanently anchored except for those installed on dealer lots. On dealer lots, temporary sets are permitted without anchoring being installed. A manufactured home must be anchored according to the manufacturer's installation instructions or according to the design of a professional engineer or architect licensed in Washington state. Local jurisdictions **may not** prescribe anchoring methods.

(d) A manufactured home must have a skirting around its entire perimeter. It must be installed per the manufacturer's installation instructions or if the manufacturer is not specific, to the standards in this section. It must be vented and allow access to the under floor area per the manufacturer's installation instructions or per the standards below if the manufacturer's instructions are not available.

If the manufacturer's skirting and access instructions are not specific, skirting, ventilation and access shall be installed as follows:

(i) Skirting:

- Skirting must be made of materials suitable for ground contact.
- Metal fasteners must be made of galvanized, stainless steel or other corrosion resistant material.
- Ferrous metal members in contact with the earth, except those made of galvanized or stainless steel, must be coated with an asphaltic emulsion.
- Skirting must not trap water between the skirting and siding or trim.
- All skirting must be recessed behind the siding or trim.

(ii) Ventilation:

For homes sited in a flood plain, contact the local jurisdiction regarding proper skirting ventilation. Except for those manufactured homes sited in a flood plain, all skirting must be vented as follows:

- Vent openings must be covered with corrosion-resistant wire mesh to prevent the entrance of rodents. The size of the mesh opening cannot exceed 1/4 inch.
- Vent openings must have a net area of not less than one square foot for each one hundred fifty square feet of under floor area.
- Vent openings must be located as close to corners and high as practical and they must provide cross ventilation on at least two opposite sides.

(iii) Access:

- Access to the under floor area of a manufactured home must have a finished opening at least eighteen inches by twenty-four inches in size.
- The access opening must be located so that all areas under a manufactured home are available for inspection.
- The access opening must be covered and that cover must be made of metal, pressure treated wood or vinyl.

(e) A manufactured home site must be prepared per the manufacturer's installation manual or per ANSI A225.1, 1994 edition, section 3.

(f) Heat duct crossovers must be installed per the manufacturer's installation instruction manual or per ANSI A225.1 or the following instructions if the manufacturer's instructions are not available:

Heat duct crossovers must be supported at least one inch above the ground by strapping or blocking. They must be installed to avoid standing water. Also, they must be installed to prevent compression, sharp bends and to minimize stress at the connections.

(g) Dryer vents must exhaust to the exterior side of the wall or skirting. Dryer ducts outside the manufactured home shall comply with the dryer manufacturer's specifications or shall be made of metal with smooth interior surfaces.

(h) Hot water tank pressure relief lines must exhaust to the exterior side of the exterior wall or skirting and must exhaust downward. The end of the pipe must be at least six inches but not more than two feet above the ground.

(i) Water piping must be protected against freezing as per the manufacturer's installation instructions or by use of a heat tape listed for use with manufactured homes and installed per the heat tape manufacturer's installation instructions.

(j) The testing of water lines, waste lines, gas lines and electrical systems must be as per the manufacturer's installation instructions. If the manufacturer's installation instructions require testing of any of these systems, the local jurisdiction is responsible for verifying that the tests have been performed and passed. Electrical connections and testing are the responsibility of the electrical section of labor and industries except where a city has assumed the electrical inspection responsibilities for their jurisdiction. In that case, the city's electrical inspectors are responsible for the electrical connections and testing.

(k) During the installation process, a ground cover must be installed under all manufactured homes. The ground cover

must be a minimum of six-mil *black* polyethylene sheeting or its equivalent (exception to ANSI A225.1 (3.5.2)). The ground cover may be omitted if the under floor area of the home has a concrete slab floor with a minimum thickness of three and one-half inches.

(1) Clearances underneath manufactured homes must be maintained at a minimum of eighteen inches beneath at least seventy-five percent of the lowest member of the main frame (I-beam or channel beam) and the ground or footing. No more than twenty-five percent of the lowest member of the main frame of the home shall be less than eighteen inches above the ground or footing. **In no case** shall clearance be less than twelve inches **anywhere** under the home (exception to ANSI A225.1 (4.1.3.3)).

(m) Heat pump and air conditioning condensation lines must be extended to the exterior of the manufactured home.

(2) Installation of a relocated manufactured (mobile) home.

(a) A relocated manufactured home installation should be conducted according to the manufacturer's installation instructions.

(b) If the manufacturer's instructions are unavailable, you may use either:

(i) The American National Standard Institute (ANSI) standard ANSI A225.1-Manufactured Homes Installation, 1994 edition instructions; or

(ii) The instructions of a professional engineer or architect licensed in Washington state.

(c) If either (b)(i) or (ii) is used, all of the requirements of WAC 296-150M-0610 (1)(c) through (m) must also be followed.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0610, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0610, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0610, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0614 How may I obtain a copy of the American National Standards Institute (ANSI) A225.1-Manufactured Homes Installation? Copies of the standard are available from:

Publications/Communications
National Conference of States on Building Codes
and Standards, Inc.
505 Huntmar Park Drive, Suite 210
Herndon, Virginia 22070

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0614, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0615 What are the requirements for temporary placement of manufactured (mobile) homes? Manufactured (mobile) homes placed on temporary display or in storage by a manufacturer, dealer or distributor in excess of thirty days shall be:

(1) Supported under each main frame beam by supports located within two feet of each end and within four feet of the front and rear axle and other supports so that no span shall exceed sixteen feet; and

(2) Made weathertight at any marriage line joint at the roof and wall lines.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0615, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0640 Does a person who installs a manufactured home need an installation permit? (1) A dealer, owner or agent must not deliver a manufactured home to its site without verifying that an installation permit has been obtained; and

(2) Any permit fees set by the local enforcement agency must be paid in full and included with the permit application.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0640, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0640, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0640, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0655 How does the local enforcement agency gain access to the manufacturer's installation instructions? A manufacturer's installation manual shall be provided for the inspecting jurisdiction whenever any portions of the manufacturer's installation instructions have been used for any portion of the installation.

(1) The installation instructions shall be located between the I-beam and the bottom board within five feet of the main electrical feeder when the skirting has not been installed.

(2) When the skirting has been installed, the installation instructions shall be located between the I-beam and the bottom board within five feet of the access opening.

(3) Instructions shall be returned to such location when the inspection is completed.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0655, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-3000 Manufactured home fees.

WAC 296-150M-3000 MANUFACTURED HOME FEES	
INITIAL FILING FEE	\$28.00
DESIGN PLAN FEES:	
STRUCTURAL ALTERATION-MASTER DESIGN (CODE CYCLE)	\$112.75
STRUCTURAL ALTERATION - ONE YEAR DESIGN	\$78.75
RENEWAL FEE	\$33.75
RESUBMITAL FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan.)	\$56.25
DEPARTMENT INSPECTION FEES:	
INSPECTION (Per hour*)	\$56.25
OTHER REQUIRED INSPECTIONS (Per hour*)	\$56.25
ALL REINSPECTIONS (Per hour*)	\$56.25
INSIGNIA FEES:	
ALTERATION	\$28.00
REISSUED - LOST/DAMAGED	\$16.50
IPIA	
DEPARTMENT AUDIT FEES	
REGULARLY SCHEDULED IPIA AUDIT:	
First inspection on each section (one time only)	\$25.75
Second and succeeding inspections of unlabelled sections (Per hour*)	\$56.25
OTHER OPIA FEES:	
Red tag removal during a regularly scheduled IPIA audit (Per hour* separate from other fees)	\$56.25
Red tag removal at a time other than a regularly scheduled IPIA audit (Per hour* plus travel time* and mileage**)	\$56.25
Increased frequency surveillance (Per hour* plus travel time* and mileage**)	\$56.25
Attendance at manufacturers training classes (Per hour* only)	\$56.25
Subpart "I" investigations (Per hour* plus travel time* and mileage**)	\$56.25
Alterations to a labeled unit (Per hour* plus travel time* and mileage**)	\$56.25
IPIA issues/Responses (Per hour* Plus travel time* and mileage**)	\$56.25
Monthly surveillance during a regularly scheduled IPIA audit (Per hour* plus travel time* and mileage**)	\$56.25
Monthly surveillance at a time other than a regularly scheduled IPIA audit (Per hour* plus travel time* and mileage**)	\$56.25
Plant certifications, recertifications and addenda updates (Per hour* plus travel time* and mileage per each inspector)	\$56.25
Response to HBT Audit during a regularly scheduled IPIA audit (Per hour*)	\$56.25
Response to HBT Audit at a time other than a regularly scheduled IPIA audit (Per hour* plus travel time* and mileage**)	\$56.25
Alternative construction (AC) letter inspections at placement site (Per hour* plus travel time* and mileage**)	\$56.25
Replacement of HUD labels (Per hour* plus travel time* and mileage**)	\$56.25
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour plus travel time* and mileage**)	\$56.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year)	\$10.75
NOTE: Local jurisdictions may have other fees that apply.	
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments.	
** Per state guidelines.	
***Actual charges incurred.	

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150M-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150M-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 70.87.030, 18.27.070, [18.27.]075, 43.22.350, [43.22.]355, [43.22.]434 and [43.22.]480(2). 97-11-053, § 296-150M-3000, filed 5/20/97, effective 6/30/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-3000, filed 10/23/96, effective 11/25/96.]

Chapter 296-150P WAC
RECREATIONAL PARK TRAILERS

WAC

296-150P-0020	What definitions apply to this chapter?
296-150P-0050	Can you prohibit the sale or lease of my recreational park trailer?
296-150P-0140	Do you allow the use of alternate materials, alternate design and method of construction?
296-150P-3000	Recreational park trailer fees.

WAC 296-150P-0020 What definitions apply to this chapter? **"Alteration"** is the replacement, addition, modification, or removal of any equipment or material that affects the fire and life safety provisions, structural system, plumbing systems, fuel systems and equipment or electrical systems of a recreational park trailer.

The following changes are not considered alterations for purposes of this chapter:

- Repairs with approved parts;
- Modification of a fuel-burning appliance according to the terms of its listing; and
- Adjustment and maintenance of equipment.

"Alteration insignia" is an insignia which indicates a recreational park trailer alteration was approved by the department.

"ANSI" is the American National Standards Institute, Inc., and the institute's rules applicable to recreational park trailers. For the purposes of this chapter, references to ANSI mean ANSI A119.5 Recreational Park Trailers, 1998 edition.

"Approved" is approved by the department of labor and industries.

"Audit" by the department is the department inspection of a manufacturer's quality control procedures, comprehensive plans, and recreational park trailers.

"Comprehensive design plan" consists of the design plans and copies of drawings such as:

- Floor plans relating to fire and life safety, structural, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances and air conditioning systems, if applicable to the plan of each recreational park trailer.
- Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.
- Electrical drawings. (See WAC 296-150P-0330.)

"Consumer" is a person or organization who buys or leases recreational park trailers.

"Dealer" is a person or organization whose business is offering recreational park trailers for sale or lease.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44430, Olympia, WA 98504-4430.

"Equipment" is all material, appliances, fixtures, and accessories used in the manufacture or alteration of recreational park trailers.

"Manual" is a reference containing instructions, procedures, responsibilities and other information used to implement and maintain the quality control program of a recreational park trailer manufacturer.

"National Electrical Code" see Appendix 'C' of ANSI A119.2 for reference to the appropriate edition to use for compliance.

"Recreational park trailer" is a trailer-type unit that is primarily designed to provide temporary living quarters for recreational, camping or seasonal use, that meets the following criteria:

- Built on a single chassis, mounted on wheels;
- Having a gross trailer area not exceeding 400 square feet (37.15 square meters) in the set-up mode; and
- Certified by the manufacturer as complying with ANSI A119.5.

"Quality control" is the plan and method for ensuring that the manufacture, fabrication, assembly, installation, storing, handling, and use of materials complies with this chapter and ANSI.

"State-plan insignia" is an insignia which is obtained under the state design-plan approval process.

"System" is a part of a recreational park trailer that is designed to serve a particular function such as plumbing, electrical, heating, mechanical or structural system.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150P-0020, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0020, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0050 Can you prohibit the sale or lease of my recreational park trailer? (1) We may prohibit the sale or lease of your recreational park trailer because it is unlawful for any person to sell, lease, or offer for sale a recreational park trailer within this state if it violates any of the requirements of this chapter (see RCW 43.22.345).

(2) If an inspection reveals that a recreational park trailer violates this chapter, we may post a notice prohibiting the sale or lease of a recreational park trailer.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150P-0050, filed 6/4/99, effective 7/5/99.]

WAC 296-150P-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

- (a) The applicant's name, address and phone number;
- (b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;
- (c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

- (a) The applicant's request as described in subsection (1) of this section;
 - (b) Research into the request;
 - (c) Expert advice.
- (3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150P-0100.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150P-0140, filed 6/4/99, effective 7/5/99.]

WAC 296-150P-3000 Recreational park trailer fees.

WAC 296-150P-3000 RECREATIONAL PARK TRAILER FEES	
INITIAL FILING FEE	\$28.00
DESIGN PLAN FEES:	
NEW PLAN REVIEW FEE WITHOUT STRUCTURAL REQUIREMENTS	\$78.75
NEW PLAN REVIEW FEE WITH STRUCTURAL REQUIREMENTS	\$104.00
RESUBMITAL FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan)	\$56.25
STATE PLAN/MANUAL FEES:	
INITIAL APPROVAL	\$10.75
RESUBMITAL FEE	\$56.25
ADDENDUM	\$56.25
DEPARTMENT AUDIT FEES:	
AUDIT (per hour) *	\$56.25
TRAVEL (per hour) *	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT INSPECTION FEES:	
INSPECTION (per hour) *	\$56.25
TRAVEL (per hour) *	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
STATE CERTIFIED	\$10.50
ALTERATION	\$28.00
REISSUED-LOST/DAMAGED	\$10.50
OTHER FEES:	
FIELD TECHNICAL SERVICE (per hour* plus travel time* and mileage**)	\$56.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150P-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150P-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-3000, filed 7/31/97, effective 12/1/97.]

**Chapter 296-150R WAC
RECREATIONAL VEHICLES**

WAC 296-150R-0020 What definitions apply to this chapter?

296-150R-0050	Can you prohibit the sale or lease of my recreational vehicle?
296-150R-0140	Do you allow the use of alternate materials, alternate design and method of construction?
296-150R-3000	Recreational vehicle fees.

WAC 296-150R-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or material that affects the fire and life safety provisions, plumbing systems, fuel systems and equipment or electrical systems of a recreational vehicle.

The following changes are not considered alterations for purposes of this chapter:

- Repairs with approved parts;
- Modification of a fuel burning appliance according to the terms of its listing; and
- Adjustment and maintenance of equipment.

"Alteration insignia" is an insignia which indicates a vehicle alteration was approved by the department.

"ANSI" is the American National Standards Institute, Inc., and the institute's rules applicable to recreational vehicles. For the purposes of this chapter, references to ANSI mean ANSI A119.2 Recreational Vehicles, 1996 edition. Effective September 1, 1999, the 1999 edition shall become effective.

"Approved" is approved by the department of labor and industries.

"Audit" by the department can be either a comprehensive audit or a performance audit. A comprehensive audit is the department inspection of a manufacturer's quality control procedures, comprehensive plans, and vehicles. A performance audit is the department's review of the manufacturer's audit performed by the industry association or other independent auditor.

"Comprehensive design plan" consists of the design plans and copies of drawings such as:

- Floor plans relating to fire and life safety, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances and air conditioning systems, if applicable to the plan of each vehicle.
- Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.
- Electrical drawings. (See WAC 296-150R-0330 and 296-150R-0820.)

"Consumer" is a person or organization who buys or leases recreational vehicles.

"Dealer" is a person or organization whose business is offering recreational vehicles for sale or lease.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44430, Olympia, WA 98504-4430.

"Equipment" is all material, appliances, fixtures, and accessories used in the manufacture or alteration of recreational vehicles or park trailers.

"Manual" is a reference containing instructions, procedures, responsibilities and other information used to imple-

ment and maintain the quality control program of a recreational vehicle manufacturer.

"National Electrical Code" see Chapter 5 of ANSI A119.2 for reference to the appropriate edition to use for compliance.

"Quality control" is the plan and method for ensuring that the manufacture, fabrication, assembly, installation, storing, handling, and use of materials complies with this chapter and ANSI.

"Recreational vehicle" is a vehicular type unit primarily designed as temporary living quarters for recreational camping, travel, or seasonal use that either has its own motive power or is mounted on, or towed by, another vehicle. Recreational vehicles include: Camping trailers, fifth-wheel trailers, motor homes, travel trailers, and truck campers.

"Self-certification insignia" is an insignia which is obtained under the self-certification approval process.

"State-plan insignia" is an insignia which is obtained under the state design-plan approval process.

"System" is a part of a recreational vehicle that is designed to serve a particular function such as plumbing, electrical, heating, or mechanical system.

"Vehicle" for the purposes of this chapter, is a recreational vehicle.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150R-0020, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0020, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0050 Can you prohibit the sale or lease of my recreational vehicle? (1) We may prohibit the sale or lease of your recreational vehicle because it is unlawful for any person to sell, lease, or offer for sale a recreational vehicle within this state if it violates any of the requirements of this chapter (see RCW 43.22.345).

(2) If an inspection reveals that a recreational vehicle violates this chapter, we may post a notice prohibiting the sale or lease of the recreational vehicle.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150R-0050, filed 6/4/99, effective 7/5/99.]

WAC 296-150R-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

- (a) The applicant's name, address and phone number;
- (b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response

will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150R-0100.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150R-0140, filed 6/4/99, effective 7/5/99.]

WAC 296-150R-3000 Recreational vehicle fees.

WAC 296-150R-3000 RECREATIONAL VEHICLE FEES	
STATE PLAN	
INITIAL FILING FEE	\$28.00
DESIGN PLAN FEES:	
NEW PLAN REVIEW FEE	\$78.75
RESUBMITAL FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan.)	\$56.25
STATE PLAN/MANUAL FEES:	
INITIAL APPROVAL	\$10.75
RESUBMITTAL FEE	\$56.25
ADDENDUM	\$56.25
DEPARTMENT AUDIT FEES:	
AUDIT (per hour) *	\$56.25
TRAVEL (per hour) *	\$56.25
PER DIEM **	
HOTEL ***	
MILEAGE **	
RENTAL CAR ***	
PARKING	
AIRFARE ***	
DEPARTMENT INSPECTION FEES:	
INSPECTION (per hour) *	\$56.25
TRAVEL (per hour) *	\$56.25
PER DIEM **	
HOTEL ***	
MILEAGE **	
RENTAL CAR ***	
PARKING ***	
AIRFARE ***	
INSIGNIA FEES:	
STATE CERTIFIED	\$10.25
ALTERATION	\$28.00
REISSUED-LOST/DAMAGED	\$10.25
OTHER FEES:	
FIELD TECHNICAL SERVICE (per hour* plus travel time* and mileage**)	\$56.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

WAC 296-150R-3000 RECREATIONAL VEHICLE FEES	
SELF CERTIFICATION	
INITIAL FILING FEE:	\$28.00
DESIGN PLAN FEES:	
NEW PLAN REVIEW FEE (one-time fee)	\$78.75
RESUBMITAL FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan.)	\$56.25
SELF CERTIFICATION/MANUAL FEES:	
INITIAL APPROVAL	\$10.75
RESUBMITTAL FEE	\$56.25
ADDENDUM	\$56.25
DEPARTMENT AUDIT FEES:	
AUDIT (per hour) *	\$56.25
TRAVEL (per hour) *	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING	
AIRFARE***	
DEPARTMENT INSPECTION FEES:	
INSPECTION (per hour) *	\$56.25
TRAVEL (per hour) *	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
SELF CERTIFIED	\$10.25
ALTERATION	\$28.00
REISSUED-LOST/DAMAGED	\$10.25
OTHER FEES:	
FIELD TECHNICAL SERVICE (per hour* plus travel time* and mileage**)	\$56.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150R-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150R-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-3000, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-3000, filed 10/23/96, effective 11/25/96.]

**Chapter 296-150T WAC
FACTORY-BUILT TEMPORARY WORKER
HOUSING STRUCTURES**

WAC

- 296-150T-0010 Authority, purpose, and scope.
- 296-150T-0020 What definitions apply to this chapter?
- 296-150T-0030 How is this chapter enforced?

- 296-150T-0040 Will you keep my manufacturing information confidential?
- 296-150T-0050 Can you prohibit the installation of factory-built temporary worker housing structures?
- 296-150T-0070 Do you have reciprocal agreements with other states to inspect factory-built temporary worker housing structures?
- 296-150T-0080 Do you allow a local enforcement agency to inspect factory-built temporary worker housing at the manufacturing location?
- 296-150T-0100 What happens if I disagree with your decision regarding my compliance with this chapter?
- 296-150T-0110 Do you have an advisory board to address factory-built temporary worker housing structure issues?
- 296-150T-0120 Where can I obtain technical assistance regarding factory-built temporary worker housing structures?
- 296-150T-0130 How do I register a complaint?
- 296-150T-0140 Do you allow the use of alternate materials, alternate design and method of construction?
- 296-150T-0200 Who must purchase factory-built temporary worker housing insignia?

296-150T-0210	What are the insignia requirements?
296-150T-0220	How do I obtain insignia information and the required forms?
296-150T-0230	What are the insignia application requirements?
296-150T-0250	How do I replace lost or damaged insignia?
296-150T-0300	When is design plan approval required?
296-150T-0320	What must I provide with my request for design-plan approval by the department?
296-150T-0340	What must an engineering analysis for design plans include?
296-150T-0350	What must the test procedures and results for design plans include?
296-150T-0380	What happens if you approve my design plan?
296-150T-0390	If my design plan is not approved, how much time do I have to submit a corrected design plan?
296-150T-0400	What happens after my design plan is approved?
296-150T-0410	When does my design plan expire?
296-150T-0500	When is an inspection required?
296-150T-0510	How do I request an inspection?
296-150T-0520	What happens if my factory-built temporary worker housing structure passes inspection?
296-150T-0530	Am I charged if I request an inspection but I am not prepared?
296-150T-0540	Who inspects factory-built temporary worker housing structures for installation at the temporary worker housing site?
296-150T-0550	Do you notify the department of health after your final inspection of factory-built structures at a manufacturing location?
296-150T-0580	Must I obtain an insignia for used factory-built structures?
296-150T-0590	How do I obtain insignia for used factory-built structures?
296-150T-0600	What manufacturing codes apply to factory-built temporary worker housing?
296-150T-0700	Must manufacturers of factory-built temporary worker housing structures notify you if they manufacture at more than one location?
296-150T-0710	Must manufacturers of factory-built temporary worker housing structures notify you of a change in business name or address?
296-150T-0720	Must manufacturers of factory-built temporary worker housing structures notify you of a change in business ownership?
296-150T-3000	Factory-built temporary worker housing fees.

WAC 296-150T-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.420, 43.22.434 and 43.22.450 through 43.22.490 and 43.70.337, covering the construction and approval of factory-built temporary worker housing.

(2) This chapter applies to the approval:

(a) Of factory-built temporary worker housing structures; and

(b) After occupancy of a factory-built temporary worker housing structure, all inspections are done by the department of health.

[Statutory Authority: RCW 43.22.480, 99-12-079, § 296-150T-0010, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0020 What definitions apply to this chapter? "Approved" is approved by the department of labor and industries.

"Damaged in transit" is damage that effects the integrity of the structural design or damage to any other system referenced in the codes required by the temporary worker housing construction standard.

"Department" is the department of labor and industries. The department may also be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

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"Department of health" is the state agency responsible for adopting by rule a "temporary worker housing construction standard." You may contact them for copies of the "temporary worker housing construction standards" at: Department of Health, PO Box 47852, Olympia, WA 98504-7852.

"Design option" is a design that a manufacturer may use as an option to its design plan.

"Design plan" is a plan for the construction of factory-built temporary worker housing that includes floor plans, elevation drawings, specifications, engineering data, or test results necessary for a complete evaluation of the design. The design plan expires one year after approval or when a new temporary worker housing construction standard becomes effective or the electrical code as adopted by chapter 296-46 WAC adopts a new code. Electrical code changes if minor may be made by submitting an addendum.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, installation, or alteration of factory-built temporary worker housing structures.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to factory-built temporary worker housing structures. (See RCW 43.22.420.)

"Factory-built temporary worker housing" is housing designed and constructed to the requirements in chapter 246-359 WAC, "temporary worker housing construction standard" as promulgated by the department of health for human occupancy. The structure which is entirely or substantially prefabricated or assembled at a place other than a building site. (See RCW 43.22.450(3).)

"Insignia" is a label that we attach to a structure to verify that a factory-built temporary worker housing structure meets the requirements of this chapter.

"Install" is to erect or set in place a structure at a building site. It may also be the construction or assembly of a component as part of a factory-built temporary worker housing.

"Listed" is a piece of equipment, a component, or an installation that appears in a list published by a testing or listing agency and is suitable for use in a specified manner.

"Listing agency" is an organization whose business is approving equipment, components, or installations for publication.

"Local enforcement agency" is the department of health with power to enforce regulations governing the installation of factory-built temporary worker housing.

"Manufacturing" is making, fabricating, forming, or assembling a factory-built temporary worker housing structure.

"Repair" is the replacement, addition, modification, or removal of any construction, equipment, system, or installation to correct damage in transit or during on-site installation before occupancy.

"Unit" is a factory-built temporary worker structure.

[Statutory Authority: RCW 43.22.480, 99-12-079, § 296-150T-0020, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0030 How is this chapter enforced?

(1) To enforce this chapter, we or another governmental inspection agency will inspect each factory-built temporary worker housing structure that is sited in Washington. Inspections will be conducted during normal work hours or at other reasonable times. (See WAC 296-150T-0070.)

(2) We will inspect each unit as required by the temporary worker housing construction standard and the electrical code. (See WAC 296-150T-0500.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0030, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information such as design plans, specifications, and test results according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0040, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0050 Can you prohibit the installation of factory-built temporary worker housing structures? (1) We may prohibit the installation of factory-built temporary worker housing structures if they do not conform to the requirements of this chapter. (See RCW 43.22.465.)

(2) If an inspection reveals that a factory-built temporary worker housing structure violates this chapter, we may obtain a temporary injunction enjoining the installation of any non-conforming structure. The injunction may be made permanent at the discretion of the court.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0050, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0070 Do you have reciprocal agreements with other states to inspect factory-built temporary worker housing structures? (1) We may enter into reciprocal agreements with states who have construction standards that are equal to or greater than our standards for factory-built structures.

(2) When we have a reciprocal agreement with another state:

(a) The reciprocal state inspects factory-built temporary worker housing structures manufactured in that state before shipment into Washington to ensure compliance with our laws. After inspection, the reciprocal state applies our insignia.

(b) The department inspects factory-built structures manufactured in Washington before shipment into the reciprocal state to ensure compliance with their laws. After inspection, we apply the insignia of the reciprocal state.

(3) Reciprocal agreements shall remain on file.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0070, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0080 Do you allow a local enforcement agency to inspect factory-built temporary worker housing at the manufacturing location? (1) A local enforcement agency (city or county), under contract with us,

can inspect factory-built temporary worker housing. In some cases their contract may be limited to specific portions of an inspection at specified manufacturing locations.

(2) After approving a unit, the local enforcement agency will attach the insignia, which indicates the unit has passed inspection.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0080, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0100 What happens if I disagree with your decision regarding my compliance with this chapter? (1) If we determine you are in violation of this chapter, you will receive a notice of noncompliance.

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request. The hearing and proceedings will be conducted according to the Administrative Procedure Act (chapter 34.05 RCW).

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0100, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0110 Do you have an advisory board to address factory-built temporary worker housing structure issues? The factory assembled structures (FAS) board advises us on issues relating to structural, plumbing, mechanical, electrical, installation, inspections, and rules for factory-assembled structures. (See RCW 43.22.420.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0110, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0120 Where can I obtain technical assistance regarding factory-built temporary worker housing structures? We provide field technical service to factory-built temporary worker housing manufacturers for an hourly fee. Field technical service may include an evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0120, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0130 How do I register a complaint? A person who believes that a structure or component does not meet the requirements of this chapter may register a complaint with the department. The complaint must be in writing and must specifically describe the alleged violations of this chapter. Upon receipt of the complaint, the department will forward a copy to the appropriate manufacturer and/or dealer and they shall have thirty days to respond to it. If the department determines that an inspection is necessary, the manufac-

turer/dealer shall pay the department for the cost of the inspection. The cost of the inspection is based upon the fee schedule in WAC 296-150T-3000 and includes the hourly inspection fee, travel costs and other expenses incurred as a result of the inspection.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0130, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

(a) The applicant's name, address and phone number;

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150T-0100.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0140, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0200 Who must purchase factory-built temporary worker housing insignia? (1) You must obtain insignia from us for each factory-built temporary worker housing unit sited in Washington state.

(2) You must have an approved design plan and have passed inspection before an insignia can be attached to your factory-built temporary worker housing structure by us or our authorized agent.

(3) If a unit is damaged in transit after leaving the manufacturing location or during an on-site installation, and a

repair is necessary, you must purchase a new insignia from us. The new insignia indicates that the unit was repaired.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0200, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0210 What are the insignia requirements? (1) If you are applying for insignia for factory-built temporary worker housing structures you must have your design plan approved and your units inspected and approved by us.

(2) We will attach the insignia after:

(a) We receive the required forms and fees from you (see WAC 296-150T-3000); and

(b) Your unit or component has passed final inspection. (See WAC 296-150T-0500.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0210, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0220 How do I obtain insignia information and the required forms? Upon request, we will provide you with a packet of information that includes the required forms.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0220, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0230 What are the insignia application requirements? (1) If you are requesting insignia for units that you intend to manufacture under a *new design plan*, your completed application must include:

(a) A completed design plan approval request form;

(b) One complete set of design plans, specifications, engineering analysis if required, test procedures and results if required, plus one additional set for each manufacturing location where the design plan will be used;

(c) If required, at least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. We will retain the set with the original wet stamp; and

(d) A one-time initial filing fee, the design plan fee (if we approve your design plan) and the fee for each insignia. (See WAC 296-150T-3000.)

(2) If you are requesting insignia under an *approved design plan*, your completed application must include:

(a) A completed application for insignia form; and

(b) The fee for each insignia requested. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0230, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is attached to your factory-built temporary worker housing structure you may obtain a replacement insignia.

(2) You should contact us and provide the following information:

(a) Your name, address, and telephone number;

(b) The name of the manufacturer;

(c) The serial number;

(d) The manufacturer number (T#), if available;

- (e) The insignia number, if available; and
- (f) The required fee. (See WAC 296-150T-3000.)

(3) If we can determine that your unit previously had an insignia, we will attach an insignia to your unit once we receive your insignia fee. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0250, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0300 When is design plan approval required? Design plans for factory-built temporary worker housing structures prior to installation at the building site in Washington must be approved when:

- (1) You build a new unit;
- (2) You modify an approved design plan through an addendum; or
- (3) You add options to an approved design plan through an addendum.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0300, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0320 What must I provide with my request for design-plan approval by the department? All requests for design-plan approval must include:

- (1) A completed design-plan approval request form;
- (2) One complete set of design plans, specifications, engineering analysis when required, test procedures and results plus one additional set for each manufacturing location where the design plan will be used (see WAC 296-150T-0340 and 296-150T-0350);
- (3) If required, at least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under his or her direct supervision shall be signed, dated and stamped with their seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed by them and they shall prepare a report concerning the plans reviewed. This report shall:

- (a) Identify which drawings have been reviewed by drawing number and date;
- (b) Include a statement that the plans are in compliance with current Washington state regulations; and
- (c) The report shall be stamped and signed by the reviewer.

Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp;

- (4) A one-time initial filing fee and the design-plan fee (see WAC 296-150T-3000); and

- (5) A "key drawing" to show the arrangement of modules if the plan covers three or more modules.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0320, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0340 What must an engineering analysis for design plans include? (1) The engineering analysis if required must show that the structural design meets the requirements of this chapter.

(2) An engineering analysis if required must be conducted according to accepted engineering practices and must be signed by a professional engineer or architect licensed in Washington state.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0340, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0350 What must the test procedures and results for design plans include? (1) Tests to a design for a factory-built temporary worker housing structure must be witnessed by a professional engineer or architect licensed in Washington state.

(2) Test reports must contain the following items:

- (a) A description of the methods or standards that applied to the test;

- (b) Drawings and a description of the item tested;

- (c) A description of the test set-up;

- (d) The procedure used to verify the correct load;

- (e) The procedure used to measure each condition;

- (f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested; and

- (g) Analysis, comments, and conclusion.

(3) The written test procedures, results and conclusions must reference the applicable design plan.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0350, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0380 What happens if you approve my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter.

(2) We will send you an approved copy of the design plan with the design-plan approval number.

(3) You must keep copies of the approved design plan at each location where a factory-built temporary worker housing structure is built.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0380, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, you must send the initial design plan fee instead of the resubmittal fee. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0390, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0400 What happens after my design plan is approved? Once your design plan is approved, we will inspect each related factory-built temporary worker housing structure.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0400, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0410 When does my design plan expire? Your factory-built temporary worker housing design plan expires either one year after approval or when there is a code change. You must submit new design plans for approval when there is a change to the temporary worker housing construction standard. You may use your design plan to order insignia as long as they comply with the applicable codes.

All National Electrical Code amendments may be incorporated by an addendum to your design plan.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0410, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0500 When is an inspection required? (1) Before we issue an insignia, each factory-built temporary worker housing structure must be inspected at the manufacturing location as many times as are required by the temporary worker housing construction standard. (See WAC 296-150T-0600.) Inspections may include:

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems are covered;

(b) Insulation inspection, if installed;

(c) A final inspection after the factory-built temporary worker housing structure is complete;

Note: Each factory-built temporary worker housing structure must have a serial number to enable us to track inspections.

(2) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(3) After a unit is manufactured but before occupancy, we must inspect a factory-built temporary worker housing structure if it is damaged in transit to the building site or during on-site installation. This is considered a repair inspection. (See WAC 296-150T-0540.)

(4) Approved design plans must be available for all inspections.

(5) Once your unit is inspected and approved we will attach the insignia.

Note: We only inspect factory-built temporary worker housing structures before occupancy. After occupancy, the department of health agency is the inspection agency.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0500, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0510 How do I request an inspection? (1) You must contact us, and we will let you know where your request for inspection should be submitted. Our address is noted in the definition of department.

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(2) We must receive in-state inspection requests at least seven calendar days prior to the date that you want the inspection.

(3) We must receive out-of-state inspection requests at least fourteen calendar days prior to the date that you want the inspection.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0510, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0520 What happens if my factory-built temporary worker housing structure passes inspection? (1) If your factory-built temporary worker housing structure passes inspection and you have met the other requirements of this chapter, we will attach the insignia.

(2) After our final inspection, we will send a notice to the local enforcement agency (NLEA) indicating whether further inspection is necessary. (See WAC 296-150T-0550.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0520, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0530 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect a factory-built temporary worker housing structure within Washington state but you are not prepared when we arrive, you must pay the minimum inspection fee and travel. (See WAC 296-150T-3000.)

(2) If you ask us to inspect a factory-built home, commercial structure, or component outside Washington state but you are not prepared when we arrive, you must pay the minimum inspection fee, travel, and per diem expenses. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0530, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0540 Who inspects factory-built temporary worker housing structures for installation at the temporary worker housing site? (1) The department of health must approve the installation.

(2) The department of health may also request a set of design plans and specifications for the unit from you.

(3) After the unit is manufactured but before occupancy, we must inspect a factory-built temporary worker housing structure if it is damaged in transit to the temporary worker housing site or during on-site installation. This is considered a repair inspection.

Note: The department of health may not open the concealed construction of a factory-built temporary worker housing structure to inspect if our insignia is attached.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0540, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0550 Do you notify the department of health after your final inspection of factory-built structures at a manufacturing location? After we perform a final inspection of a factory-built temporary worker housing structure we will send a notice to the department of health that:

(1) Specifies what connections, standards, and incomplete items the department of health must check when the unit is installed; and/or

(2) Estimates the expected time of arrival of the factory-built temporary worker housing structure to the site.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0550, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0580 Must I obtain an insignia for used factory-built structures? All used factory-built housing and commercial structures that are to be for temporary worker housing must have an insignia of approval from us prior to being installed as temporary worker housing.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0580, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0590 How do I obtain insignia for used factory-built structures? We consider used factory-built housing and commercial structures as new structures for purposes of use as temporary worker housing and an insignia approval as temporary worker housing must be obtained. To obtain insignia, you must:

(1) Have the design plan approved by us (see WAC 296-150T-0300 through 296-150T-0480);

(2) Purchase insignia (see WAC 296-150T-0200 through 296-150T-0230); and

(3) Pass a unit inspection (see WAC 296-150T-0500 through 296-150T-0550).

Note: You will be required to open up as much of the construction of the unit as is necessary for inspection to show compliance with your approved design plan.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0590, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0600 What manufacturing codes apply to factory-built temporary worker housing? (1) All design, construction, installations, and alterations of factory-built temporary worker housing structures must conform with the following codes and the requirements of this chapter:

(a) The temporary worker housing construction code, chapter 246-359 WAC;

(b) The National Electrical Code as referenced in chapter 19.28 RCW and in chapter 296-46 WAC.

(2) All construction methods and installations must comply with chapter 246-359 WAC and use accepted engineering practices when used, provide minimum health and safety to the occupants of factory-built temporary worker housing structures and the public, and demonstrate journey person quality of work of the various trades.

(3) Requirements for any size, weight, or quality of material modified by the terms "minimum," "not less than," "at least," and similar expressions are minimum standards. The manufacturer may exceed these standards, provided the deviation does not result in inferior installation or defeat the purpose and intent of the standard.

Note: The codes, RCW's, and WAC's referenced in this rule are available for reference at the Washington State Library, the Washington State Law Library, and may be available at your local library.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0600, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0700 Must manufacturers of factory-built temporary worker housing structures notify you if they manufacture at more than one location? (1) If you are manufacturing factory-built temporary worker housing structures at more than one location, approved design plans must be available at each manufacturing location.

(2) You are required to send us the following information for each manufacturing location:

(a) Company name;

(b) Mailing and physical address; and

(c) Phone and FAX number if available.

(3) You must update this information as it changes.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0700, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0710 Must manufacturers of factory-built temporary worker housing structures notify you of a change in business name or address? (1) If you are moving, notify us in writing prior to a change of business name or address.

(2) Your notice must include the change of name and address.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0710, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0720 Must manufacturers of factory-built temporary worker housing structures notify you of a change in business ownership? (1) When a manufacturer changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture the units according to a prior approved design plan if the prior owner releases the design plan.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0720, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-3000 Factory-built temporary worker housing fees.

WAC 296-150T-3000 TEMPORARY WORKER HOUSING FEES	
INITIAL FILING FEE	\$39.25
DESIGN PLAN FEES:	
INITIAL ONE YEAR DESIGN	\$112.75
RENEWAL FEE	\$39.25
RESUBMIT FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan)	\$56.25
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) shall be charged per hour or fraction of an hour *	\$66.50
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$10.75
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage* *)	\$56.25
TRAVEL (Per hour) *	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$56.25
TRAVEL (Per hour*)	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
FIRST SECTION	\$158.00
EACH ADDITIONAL SECTION	\$15.50
REISSUED-LOST/DAMAGED	\$39.25
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage* *)	\$56.25
NOTIFICATION TO LOCAL ENFORCEMENT AGENCY (NLEA)	\$23.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments	
** Per state guidelines	
*** Actual charges incurred	

[Statutory Authority: RCW 43.22.480, 99-12-079, § 296-150T-3000, filed 5/28/99, effective 6/28/99.]

Chapter 296-150V WAC

CONVERSION VENDOR UNITS AND MEDICAL UNITS

WAC

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- 296-150V-0200 Who must obtain conversion vendor unit or medical unit insignia?
- 296-150V-0210 What are the insignia requirements?

- 296-150V-0220 How do I obtain insignia information and the required forms?
- 296-150V-0230 What are the insignia application requirements?
- 296-150V-0240 What documentation do you need to perform an alteration inspection?
- 296-150V-0250 How do I replace lost or damaged insignia?
- 296-150V-0300 When is design-plan approval required?
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- 296-150V-0350 What must test procedures and results for design plans include?
- 296-150V-0380 What happens if you approve my design plan?
- 296-150V-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan?
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- 296-150V-0510 How do I request an inspection?
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- 296-150V-0540 Who inspects a conversion vendor unit or medical unit installation at the building site or event location?
- 296-150V-0550 Do you allow a conversion vendor unit or medical unit to be completed at the installation site?
- 296-150V-0560 What happens if I receive a notice of noncompliance after inspection of the alteration to my conversion vendor unit or medical unit?
- 296-150V-0580 Must I obtain an insignia for used conversion vendor units or medical units?
- 296-150V-0590 How do I obtain insignia for used conversion vendor units or medical units?
- 296-150V-0700 Must manufacturers of conversion vendor units and medical units notify you if they manufacture at more than one location?
- 296-150V-0710 Must manufacturers of conversion vendor units and medical units notify you of a change in business name or address?
- 296-150V-0720 Must manufacturers of conversion vendor units and medical units notify you of a change in business ownership?
- 296-150V-0800 What manufacturing codes apply to conversion vendor units or medical units?
- 296-150V-0930 When are structural load tests or structural calculations required?
- 296-150V-0950 What requirements apply to roof coverings?
- 296-150V-1040 Are there floor requirements?
- 296-150V-1070 What requirements apply to floor closure material?
- 296-150V-1090 What are the standards for equipment and installations?
- 296-150V-1100 What are the flame-spread limitations?
- 296-150V-1110 Combustible limitations.
- 296-150V-1120 What are the standards for wall and cabinet protection?
- 296-150V-1170 What are the light and ventilation requirements?
- 296-150V-1180 What requirements apply to conversion vendor unit exits on all units approved after December 31, 1999?
- 296-150V-1185 What exit door requirements apply to self-propelled medical unit exits?
- 296-150V-1190 Interior privacy locks.
- 296-150V-1220 What code and installation requirements apply to conversion vendor unit or medical unit electrical systems?
- 296-150V-1303 How must storage batteries be installed in a conversion vendor unit or medical unit?
- 296-150V-1330 What are the mechanical requirements for a conversion vendor unit or medical unit?
- 296-150V-1350 What are the LPG system enclosure and mounting requirements for a conversion vendor unit or medical unit?
- 296-150V-1360 What are the fuel gas piping design requirements for a conversion vendor unit or medical unit?
- 296-150V-1380 Can gas tubing be concealed in a conversion vendor unit or medical unit?
- 296-150V-1390 What are the pipe-joint compound requirements for gas piping in a conversion vendor unit or medical unit?
- 296-150V-1400 What are the gas piping hanger and support requirements for a conversion vendor unit or medical unit?
- 296-150V-1410 What are the electrical bonding requirements for gas piping in a conversion vendor unit or medical unit?
- 296-150V-1420 How are gas supply connections in a conversion vendor unit or medical unit identified?
- 296-150V-1430 What requirements apply to gas piping system openings?
- 296-150V-1440 Are gas piping shut-off valves required in a conversion vendor unit or medical unit?
- 296-150V-1450 What requirements apply to testing for gas piping leaks before conversion vendor unit or medical unit appliances are connected?
- 296-150V-1460 What requirements apply to testing for gas piping leaks after conversion vendor unit or medical unit appliances are connected?
- 296-150V-1470 What are the requirements for appliance installations?
- 296-150V-1530 What general plumbing requirements apply?
- 296-150V-1540 What are the plumbing definitions?
- 296-150V-1550 What requirements apply to drain outlets?
- 296-150V-1560 What is the minimum clearance for drain outlets?
- 296-150V-1570 What requirements apply to water-supply connections?
- 296-150V-1580 What requirements apply to water heater relief valves and safety devices?
- 296-150V-1590 What requirements apply to waste holding tanks for conversion vendor units?
- 296-150V-3000 Conversion vendor units and medical units—Fees.

WAC 296-150V-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.340 through 43.22.434 covering the construction, alteration, and approval of conversion vendor units and medical units sold, leased, or used in Washington state.

(2) This chapter applies to the approval of conversion vendor unit and medical unit manufacturers, dealers, and to any person who manufactures or alters the plumbing, mechanical, or electrical system of a conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0010, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or installation that affects the construction for concentrated floor loads, fire and life safety, or the plumbing, mechanical, and electrical systems of a conversion vendor unit or medical unit.

The following are not considered alterations:

- Repairs with approved parts;
- Modifications of a fuel-burning appliance according to the listing agency's specifications; or
- Adjustment and maintenance of equipment.

"Approved" is approved by the department of labor and industries.

"Consumer" is a person or organization, excluding a manufacturer or dealer of conversion vendor units or medical units, who buys or leases a conversion vendor unit or medical unit.

"Conversion vendor unit" means a motor vehicle or other structure that has been converted or built for the purpose of being used for commercial sales at temporary locations. The units must be 8 feet 6 inches or less in width (exterior floor measurement) in the set-up position, and the inside working area must be less than 40 feet in length (interior floor measurement). Conversion vendor units:

- Are transported in only one section;
- Are designed for highway use;

- Are temporarily occupied for distribution of items, e.g., food;
- Are built on a permanent chassis; and
- Include at least one of the following systems: Plumbing, mechanical or 120 and/or 240 volt electrical.

"Damaged in transit" means damage that affects the integrity of a concentrated floor load design or any of the systems.

"Dealer" is a person, company, or corporation whose business is leasing, selling, offering for lease or sale, buying, or trading conversion vendor units, or medical units.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, P.O. Box 44440, Olympia, WA 98504-4440.

"Design plan" is a plan for the construction or alteration of a conversion vendor unit or medical unit or conversion of a vehicle to a conversion vendor unit or medical unit including floor plans, specifications, or test results necessary for a complete evaluation of the design, if applicable.

"Design option" is a design that a manufacturer may use as an option to its conversion vendor unit or medical unit design plan.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, conversion to, or alteration of a conversion vendor unit or medical unit.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to conversion vendor units and medical units.

"Insignia" is a label that we attach to a conversion vendor unit or medical unit to verify that the structure meets the requirements of this chapter and the applicable codes.

"Install" is to erect, construct, assemble, or set a conversion vendor unit or medical unit in place.

"Labeled" is to bear the department's insignia.

"Listed" is a piece of equipment or apparatus that has been approved by a testing agency to the appropriate standard.

"Local enforcement agency" is an agency of city or county government with power to enforce local regulations governing the installation of a conversion vendor unit or medical unit.

"Medical unit" is a type of self-propelled unit used to provide medical examinations, treatments, and medical and dental services or procedures, not including emergency response vehicles, and which:

- Is transportable;
- Is temporarily placed and used;
- Is built on a permanent chassis;
- Includes at least one system;
- Is for temporary use only.

"One-year design plan" is a design plan that expires one year after approval or when a new state building code has been adopted.

"System" is part of a conversion vendor unit or medical unit designed to serve a particular function. Examples include plumbing, electrical, or mechanical systems.

"Temporary locations" means a maximum of thirty days on a site.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0020, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0030 How is this chapter enforced?

(1) To enforce this chapter, we or another governmental inspection agency will inspect each conversion vendor unit or medical unit manufactured, sold, leased, or used in Washington state as required by this chapter.

(2) We will inspect all alterations.

(3) We will conduct inspections during normal work hours or at other reasonable times.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0030, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0040 Is manufacturing information kept confidential? We will only release manufacturing information such as design plans, specifications, and test results according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0040, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0050 Can you prohibit the sale or lease of a conversion vendor unit or medical unit? (1) We may prohibit the sale or lease of your conversion vendor unit or medical unit because it is unlawful for any person to sell, lease, or offer for sale a conversion vendor unit or medical unit within this state if it violates any of the requirements of this chapter.

(2) If an inspection reveals that a conversion vendor unit or medical unit violates this chapter, we may post a notice prohibiting the sale or lease of a conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0050, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0060 Who handles consumer complaints about conversion vendor units or medical units?

(1) Consumers may file complaints within one year of the date of manufacture.

(2) The complaint should be in writing and describe the item(s) that may not comply with this chapter.

(3) After we receive the complaint, we will send the manufacturer and the dealer a copy of the complaint.

(4) The manufacturer and/or dealer have thirty days to respond. We will base our actions on the response.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0060, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0070 Do you have reciprocal agreements with other states to inspect conversion vendor units and medical units? (1) We will enter into reciprocal agree-

ments with states that have inspection standards equal or greater than our standard.

(2) When we have a reciprocal agreement with another state:

(a) The reciprocal state inspects the conversion vendor units and medical units manufactured in that state before shipment into Washington to ensure compliance with our laws. After inspection, the reciprocal state applies our insignia.

(b) The department inspects conversion vendor units and medical units manufactured in Washington before shipment into the reciprocal state to ensure compliance with their laws. After inspection, we apply the insignia of the reciprocal state.

(3) We have reciprocal agreements on file.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0070, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0080 Do you allow a local enforcement agency to inspect conversion vendor units and medical units at the manufacturing location? (1) A local enforcement agency (city or county), under contract with us, can inspect conversion vendor units and medical units. In some cases, another agency's contracts may be limited to specific portions of an inspection at specified manufacturing locations.

(2) After approving a unit, the local enforcement agency will attach the insignia which indicates that the unit has passed inspection.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0080, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0100 What happens if I disagree with your decision regarding my compliance with this chapter? (1) If we determine that you are in violation of this chapter, you will receive a notice of noncompliance.

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request;

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed;

(c) Hear your case;

(d) Send written notice of our decision to you.

(4) If you disagree with our decision, you may appeal it under the Administrative Procedure Act, chapter 34.05 RCW.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0100, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0110 Do you have an advisory board to address conversion vendor unit and medical unit issues? The factory assembled structures (FAS) board advises us on issues relating to plumbing, mechanical, electrical, inspections, and rule adoption for conversion vendor units and medical units. (See RCW 43.22.420.)

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0110, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0120 Where can I obtain technical assistance regarding conversion vendor units or medical units? We offer field technical service to conversion vendor unit and medical unit manufacturers for an hourly fee. (See WAC 296-150V-3000.) Field technical service may include evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0120, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0140 Do you allow the use of alternate materials, design, or method of construction? An applicant may apply for the use of alternate materials, design, or methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) **Responsibilities of the applicant.** The applicant must submit in writing the following information:

(a) Name, address, and phone number;

(b) The specific requirement or requirements from which the alternate material, design, or method of construction is requested;

(c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, design, or method of construction;

(d) How the use of alternate materials, design, or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements;

The department has a form that you may use for your request. Please contact us at the address shown in WAC 296-150V-0020, Definitions.

(2) **Responsibilities of the department.** The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) **Applicant's response to denials.** The applicant may appeal the department's decision by following the procedure in WAC 296-150V-0100.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0140, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0200 Who must obtain conversion vendor unit or medical unit insignia? (1) You must obtain an insignia from us for each conversion vendor unit or medical unit manufactured, sold, leased, or used in Washington state.

(2) You do not need an insignia for a conversion vendor unit or medical unit:

(a) When a unit has been used outside of the state for six months before being brought into Washington state (see RCW 43.22.380); or

(b) If a unit was manufactured prior to July 1, 1968. (See RCW 43.22.370.)

(3) You must obtain an insignia when conversion vendor units or medical units are altered in Washington state.

(4) You must obtain an alteration insignia when a conversion vendor unit or medical unit is damaged in transit after leaving the manufacturing location or during an on-site installation and an alteration or repair is necessary. The insignia indicates the conversion vendor unit or medical unit was altered or repaired.

(5) You must have an approved design plan and pass our inspection before we will attach an insignia.

Note: All conversion vendor units and medical units must have insignia if they are altered; this includes the exceptions in subsection (2)(a) and (b) of this section.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0200, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0210 What are the insignia requirements? (1) If you are applying for insignia, you must have your design plan approved and your conversion vendor unit or medical unit inspected and approved by us.

(2) If you are a manufacturer, dealer, or owner applying for an alteration insignia, your alteration must be inspected and approved by us. Approval of the design plan may also be required.

(3) We will attach the insignia to your conversion vendor unit or medical unit after:

(a) We receive from you the required forms and fees listed in WAC 296-150V-3000; and

(b) Your conversion vendor unit or medical unit has passed final inspection.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0210, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0220 How do I obtain insignia information and the required forms? Upon request, we will provide you with a packet of information that includes the required forms. Our address is noted in the definition of "department" in WAC 296-150V-0020.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0220, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0230 What are the insignia application requirements? (1) If you are requesting insignia for conversion vendor units or medical units that you intend to manufacture under a new design plan, your completed application must include:

(a) A completed design plan approval request form;

(b) One complete set of design plans, specifications, engineering analysis and test procedures and results (when applicable), plus one additional set for each manufacturing location where the design plan will be used;

(c) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. We will retain the set with the original wet stamp; and

(d) A one-time initial filing fee, the design plan fee, and the fee for each insignia (see WAC 296-150V-3000).

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(2) If you are requesting insignia under an approved design plan, your completed application must include:

(a) A completed insignia application form; and

(b) The fee for each conversion vendor unit or medical unit insignia (see WAC 296-150V-3000).

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0230, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0240 What documentation do you need to perform an alteration inspection? If you alter a conversion vendor unit or medical unit, we must inspect the alteration.

(1) Before we perform an alteration inspection and attach an alteration insignia, you must send us:

(a) Description of the proposed alteration;

(b) The plan review fee;

(c) The inspection fee; and

(d) The insignia application and fee.

(2) A design plan review is not required if the alteration can be made without altering any of the existing structure.

Note: All fees are listed in WAC 296-150V-3000 at the end of this chapter.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0240, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is placed on a conversion vendor unit or medical unit, you may obtain a replacement insignia by contacting us and providing the following:

(a) Your name, address, and telephone number;

(b) The name of the manufacturer or person converting the conversion vendor unit or medical unit;

(c) The serial number;

(d) The manufacturer number (V#) if available;

(e) The insignia number if available;

(f) The required fee from WAC 296-150V-3000; and

(2) If we can determine that your unit previously had an insignia, we will:

(a) Perform an inspection to ensure that no unauthorized remodeling has occurred; and

(b) Attach an insignia to your unit once we receive your insignia fee listed in WAC 296-150V-3000.

Note: If unauthorized remodeling has occurred see WAC 296-150V-0200.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0250, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0300 When is design-plan approval required? Design plans for conversion vendor units and medical units are required for units that are sold, leased, or used in Washington state and must be approved when:

(1) You build a new unit;

(2) You modify an approved design plan through addendums;

(3) You add options to an approved design plan through addendums.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0300, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0310 Who can approve design plans? Your design plan must be approved by the department.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0310, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0320 What must I provide with my request for conversion vendor unit or medical unit design-plan approval by the department? (1) All requests for design-plan approval must include:

- (a) A completed design-plan approval request form;
- (b) Two sets of design plans, specifications and test results and procedures necessary for a complete evaluation of the design;
- (c) Receipt of the design-plan fee listed in WAC 296-150V-3000;
- (d) Receipt of the initial design-plan filing fee and the initial design-plan fee.

(2) If a structural analysis or test is required for a concentrated floor load, at least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under the engineer or architect's direct supervision shall be signed, dated and stamped with his or her seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed and he or she must prepare a report concerning the plans. This report must:

- (a) Identify which drawings have been reviewed by drawing number and date;
 - (b) Include a statement that the plans are in compliance with current Washington state regulations; and
 - (c) Be stamped and signed by the reviewer.
- (3) Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp.

(4) All plans required by WAC 296-46-140, plan review for health care facilities, require a separate electrical plan review and electrical plan review fees (see fees in WAC 296-150V-3000).

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0320, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0340 When is an engineering analysis or structural load test for design plans required? An engineering analysis or structural load test may be required when there are concentrated loads of 500 pounds or more in a 16 square feet or less area.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0340, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0350 What must test procedures and results for design plans include? (1) Test to a design

must be witnessed by a professional engineer or architect licensed in Washington or by a department employee.

- (2) Test reports must contain the following items:
 - (a) A description of the methods or standards that applied to the test;
 - (b) Drawings and a description of the item tested;
 - (c) A description of the test set-up;
 - (d) The procedure used to verify the correct load;
 - (e) The procedure used to measure each condition;
 - (f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested; and
 - (g) Analysis, comments, and conclusion.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0350, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0380 What happens if you approve my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter.

(2) We will send you an approved copy of the design plan with the design-plan approval number.

(3) You must keep copies of the approved design plan available for inspection at each location where the conversion vendor unit or medical unit is built.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us along with the resubmittal fee listed in WAC 296-150V-3000.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0380, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, the initial design-plan fee is required instead of the resubmittal fee. (See WAC 296-150V-3000.)

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0390, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0400 What happens after my design plan is approved? Once your design plan is approved, we will inspect each conversion vendor unit and medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0400, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0410 When does my design plan expire? (1) Your conversion vendor unit or medical unit one-year design plan expires either one year after approval or when there is an electrical code change. You must submit new design plans for approval when there is a state building code cycle change. You may use your design plans to order insignia as long as they comply with the applicable codes.

(2) All National Electrical Code (NEC) amendments may be incorporated by an addendum to your design plan.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0410, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0415 Who approves addendums to design plans? Any addendums to a design plan must be approved by the department.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0415, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0500 When is an inspection required? (1) Before we issue an insignia, each unit manufactured or converted must be inspected as many times as required to show compliance with this chapter.

(2) Before we issue an insignia, a conversion vendor unit or medical unit must be inspected at the manufacturing location as many times as required. Inspections may include, but are not limited to:

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems (if required) are covered;

(b) Insulation and vapor barrier inspection, if required; and

(c) A final inspection after the conversion vendor unit or medical unit is complete.

(3) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(4) If a conversion vendor unit or medical unit is damaged in transit to the building site or during on-site installation, it must be inspected. This is considered an alteration inspection. (See WAC 296-150V-0240.)

(5) Approved plans must be available.

(6) Once your unit is inspected and approved we will attach the insignia. Before we issue an insignia, each conversion vendor unit or medical unit is inspected as follows:

(a) Inspection(s) during conversion or alteration of a conversion vendor unit or medical unit; and

(b) A final inspection after the conversion vendor unit or medical unit is complete.

Note: Each conversion vendor unit or medical unit must have a serial number so we can track inspections.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0500, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0510 How do I request an inspection? You must contact us and we will let you know where your request for inspection should be submitted. Our address is noted in the definition of department in WAC 296-150V-0020.

(1) We must receive in-state inspection requests at least seven calendar days prior to the date that you want the inspection.

(2) We must receive out-of-state inspection requests at least fourteen calendar days prior to the date that you want the inspection.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0510, filed 8/31/99, effective 10/1/99.]

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WAC 296-150V-0520 What happens if my conversion vendor unit or medical unit passes inspection? If your conversion vendor unit or medical unit passes inspection and you have met the other requirements of this chapter, we will attach the insignia.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0520, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0530 Am I charged if I request an inspection but I am not prepared? If you ask us to inspect a conversion vendor unit or medical unit within Washington state but you are not prepared when we arrive, you must pay the inspection fee and travel. If the inspection is outside of Washington state and you are not prepared, you must pay the inspection fee, travel, and per diem expenses.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0530, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0540 Who inspects a conversion vendor unit or medical unit installation at the building site or event location? The local enforcement agency (city or county) must approve the installation. Alterations to conversion vendor units or medical units must be inspected and approved by us.

Note: The local enforcement agency may not open the concealed construction of a conversion vendor unit or medical unit to inspect it if our insignia is attached.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0540, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0550 Do you allow a conversion vendor unit or medical unit to be completed at the installation site? No. Conversion vendor units or medical units must be completed at the manufacturing location before an insignia is attached.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0550, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0560 What happens if I receive a notice of noncompliance after inspection of the alteration to my conversion vendor unit or medical unit? (1) If your conversion vendor unit or medical unit alteration does not pass our inspection, you will receive a notice of noncompliance. The notice of noncompliance explains what items must be corrected.

(2) You have twenty days after receiving the notice of noncompliance to send us a written response to explain how you will correct the violations.

(3) You are not allowed to sell, lease, offer for sale or use the altered conversion vendor unit or medical unit until you correct the violations. We must inspect and approve the corrections, and you must pay any required inspection and insignia fees listed in WAC 296-150V-3000.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0560, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0580 Must I obtain an insignia for used conversion vendor units or medical units? All used conversion vendor units or medical units that are to be

installed on a building site or used in Washington state must have an insignia of approval from us, with the exception of those in WAC 296-150V-0200(2).

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0580, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0590 How do I obtain insignia for used conversion vendor units or medical units? We consider used conversion vendor units and medical units as new units for purposes of insignia approval. To obtain insignia, you must:

- (1) Have the design plan approved (see WAC 296-150V-0300 and 296-150V-0320);
- (2) Purchase insignia (see WAC 296-150V-0200 through 296-150V-0230); and
- (3) Pass a unit inspection (see WAC 296-150V-0500 through 296-150V-0560).

Note: You will be required to open up as much of the construction of the unit as is necessary for inspection to show compliance with your approved design plan.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0590, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0700 Must manufacturers of conversion vendor units and medical units notify you if they manufacture at more than one location? (1) If you are manufacturing conversion vendor units and medical units at more than one location, approved design plans must be available at each manufacturing location.

(2) You must send us the following information for each manufacturing location:

- (a) Company name;
 - (b) Mailing and physical address; and
 - (c) Phone and FAX number, if available.
- (3) You must update this information as it changes.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0700, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0710 Must manufacturers of conversion vendor units and medical units notify you of a change in business name or address? If you are moving you must notify us in writing prior to a change of business name or address and include the change of name and address.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0710, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0720 Must manufacturers of conversion vendor units and medical units notify you of a change in business ownership? (1) When a manufacturer changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture the units according to a prior approved design plan if the prior owner provides written releases of the design plan.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0720, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0800 What manufacturing codes apply to conversion vendor units or medical units? (1) A

conversion vendor unit or medical unit must comply with the following codes where applicable:

(a) The Uniform Mechanical Code, with the amendments made by the Washington State Building Code Council, chapter 51-42 WAC;

(b) The National Electrical Code as referenced in chapter 19.28 RCW and chapter 296-46 WAC, installing electric wires and equipment;

(c) The Uniform Plumbing Code 1997 edition with the amendments under chapter 19.27 RCW;

(d) The Washington State Building Code Council, chapter 51-40 WAC, Uniform Building Code, Chapter 11, Accessibility as applies to the exterior of the unit relating to customer service facilities in section 1105.4.7; and

(e) The Washington State Energy Code, chapter 51-11 WAC, and the Washington State Ventilation and Indoor Air Quality Code, chapter 51-13 WAC, when heating and/or air conditioning is installed.

(2) Provide minimum health and safety to the occupants of conversion vendor units and medical units and the public, and demonstrate journeyman quality of work of the various trades.

(3) Requirements for any size, weight, or quality of material modified by the terms "minimum," "not less than," "at least," and similar expressions are minimum standards. The conversion vendor unit or medical unit may exceed these rules provided the deviation does not result in inferior installation or defeat the purpose and intent of this chapter.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0800, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0930 When are structural load tests or structural calculations required? (1) A structural analysis is required when a unit has a concentrated floor load of 500 pounds or more in a 16 square feet or less area.

(2) The structural load test can be used as an alternative.

(a) A structural assembly tested for qualification must sustain the design dead load plus the superimposed design live loads for vendor units and medical units assembly.

(b) An assembly failure is defined as a rupture, fracture, or residual deflection which is greater than the limits.

Note: We will provide test procedure forms upon request.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0930, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0950 What requirements apply to roof coverings? (1) The roof covering must be securely fastened in an approved manner to the supporting roof construction and must provide weather protection for the vendor unit and the occupants.

(2) Exterior covering materials, including metal coverings, must be moisture and weather resistant and contain corrosion resistant fasteners to prevent wind and rain deterioration.

Note: Electro-plated, electro-deposited zinc, and electro-galvanized staples are not considered corrosion-resistant materials.

(3) All exterior openings or penetrations into the conversion vendor unit or medical unit around piping, ducts, ple-

nums, or vents must be sealed with moisture-resistant material.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0950, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1040 Are there floor requirements?

Wood floors must be made moisture resistant by an overlay of nonabsorbent material applied with water-resistant adhesive.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1040, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1070 What requirements apply to floor closure material? (1) Floor closure material around piping, ducts, plenums, or vents must prevent damage to the underside of the vendor unit due to air, water, insects, dust, and be rodent resistant.

(2) The floor closure material must meet ASTM D-781 standard or equal and be installed as follows:

(a) Fibrous material (with or without patches) must meet or exceed the level of 48 inch-pounds of puncture resistance as tested.

(b) Patching material must be installed according to installation instructions furnished by the supplier of the material.

(c) The material must be suitable for patches and the patch life must be equivalent to the material life.

Note: ASTM D-781 is a puncture test for bottom board materials.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1070, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1090 What are the standards for equipment and installations? (1) The manufacturer's equipment and installation specifications must be followed. Other approved standards are acceptable when:

(a) Installed according to the manufacturer's installation instructions; and

(b) Approved by a listing or testing agency.

(2) No solid fuel (e.g., charcoal) appliances may be installed in a conversion vendor unit or medical unit.

Note: Gas furnaces, gas water heaters, and gas refrigerators must be sealed combustion or completely separated from the interior of the conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1090, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1100 What are the flame-spread limitations? The flame-spread requirements are that all walls and ceilings must be of 200 flame-spread or less.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1100, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1110 Combustible limitations. (1)

The exposed wall adjacent to the cooking range must be 50 flame-spread or less, such as 5/16 inch gypsum board or material having equivalent fire protective properties.

(2) All openings for pipes and vents in furnace and water heater spaces shall be tight-fitted or fire-stopped.

[2000 WAC Supp—page 1406]

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1110, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1120 What are the standards for wall and cabinet protection? The bottom and sides of combustible cabinets over cooking appliances or tops including a space of 6 inches from the edge of the burners must be protected with at least 5/16 inch sheetrock with a 25 flame-spread. This material must be behind deep-fat fryers, grills, ranges, and other cooking appliances. It must extend 6 inches beyond the edge of the appliance and range hood.

(1) Range hoods for commercial equipment must meet the requirements of the mechanical code such as fire suppression, etc.

(2) Range hoods for noncommercial equipment may be of a residential type.

(3) The hood must be centered over and at least as wide as the top of the cooking appliance.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1120, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1170 What are the light and ventilation requirements? Each bathroom must be provided with artificial light and with a window having at least 1/2 square feet of glazed area that can be fully opened, except where a mechanical ventilation system is installed. Any mechanical ventilation system must exhaust directly to the outside of the conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1170, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1180 What requirements apply to conversion vendor unit exits on all units approved after December 31, 1999? At least one conversion vending unit or medical unit exit must meet the following requirements:

(1) Exterior doors must be constructed for exterior use.

(2) The exterior door must be at least a 28 inch wide clear opening by 72 inches high.

(3) Locks must be operable from the interior of the unit without use of a key.

(4) Exit doors may either be hinged or sliding. Roll-up doors may not be used to meet the requirements of this section.

(5) Existing units with doors less than 28 inches in width must have a second means of exit. The second means of exit for converted units shall be 24 inches by 17 inches, and for newly built units exits must be a minimum of 5 square feet of openable area.

Exception: When there are employees, a minimum of 28 inches clear opening must be provided.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1180, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1185 What exit door requirements apply to self-propelled medical unit exits? Exit door(s) on self-propelled medical units must meet the following requirements:

(1) Exterior doors must be constructed for exterior use.

(2) The exterior door must be at least a 28 inches wide clear opening by 72 inches high.

(3) Locks must be operable from the interior of the unit without use of a key.

(4) Exit doors may either be hinged or sliding. Roll-up doors may not be used to meet the requirements of this section.

(5) Units over 24 feet in length must have a minimum of 2 exit doors.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1185, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1190 Interior privacy locks. If a conversion vendor unit or medical unit has an interior door, such as a bathroom door, which has a privacy lock, the lock must contain an emergency release. The emergency release must be on the outside to permit entry when the door is locked from the inside.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1190, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1220 What code and installation requirements apply to conversion vendor unit or medical unit electrical systems? The electrical system in any conversion vendor unit or medical unit must comply with the National Electrical Code as referenced in chapter 19.28 RCW, Article 550 and the applicable portions of other Articles as required by this section.

(1) Appliances must be installed per Articles 422 - Appliances.

(2) Generators must be installed per Article 445 - Generators.

(3) On a 120 volt system a 3-wire system can be used. On a 240 volt system a 4-wire system must be used.

Exception: Sign circuits required by Article 600 will not be required.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1220, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1303 How must storage batteries be installed in a conversion vendor unit or medical unit? Storage batteries subject to the provisions of this standard must be securely attached to the conversion vendor unit or medical unit. They must be installed in an area which is vapor-tight to the interior and ventilated directly to the exterior of the unit. When batteries are installed in a compartment, the compartment must be ventilated with openings of not less than 2 square inches at the top and 2 square inches at the bottom. Batteries must not be installed in a compartment containing spark or flame producing equipment, except in an engine generator compartment if the only charging source is the generator itself.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1303, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1330 What are the mechanical requirements for a conversion vendor unit or medical unit? When mechanical and ventilation equipment is installed in or on a conversion vendor unit or medical unit, it must be installed according to the requirements of the Uni-

form Mechanical Code, and to the conditions of the equipment approval or listing.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1330, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1350 What are the LPG system enclosure and mounting requirements for a conversion vendor unit or medical unit? (1) LPG containers must not be installed, nor stored temporarily, inside any unit. Exception: This prohibition does not apply to completely self-contained hand torches, lanterns, or similar equipment with containers having a maximum water capacity of two and one-half pounds (approximately one pound LPG capacity).

(2) Containers, control valves and regulating equipment, when installed, must meet one of the following requirements:

(a) Be mounted on the "A" frame and not lower than the bottom of the trailer frame; or

(b) Installed in a compartment that is vapor-tight to the inside of the conversion vendor unit or medical unit and accessible only from the outside; or

(c) Be mounted on the chassis or to the floor and neither the container nor its supports may be lower than the top of the axle height.

(3) The compartment must be ventilated at top and bottom to diffuse vapors. The compartment must be ventilated with two vents having an aggregate area of not less than two percent of the floor area of the compartment and must open without restriction to the outside. The required vents must be equally distributed between the floor and ceiling of the compartment. If the lower vent is located in the access door or wall, the bottom edge of the vent must be flush with the floor level of the compartment. The top vent must be located in the access door or wall with the bottom of the vent not more than 12 inches below the ceiling level of the compartment. All vents must have an unrestricted discharge to the outside atmosphere. Access doors or panels of compartments must not be equipped with locks or require special tools or knowledge to open.

(4) Doors, hoods, domes, or portions of housings and enclosures required to be removed or opened for container replacement must incorporate means for clamping them firmly in place and preventing them from working loose during transit. Provisions must be incorporated in the assembly to hold the containers firmly in position and prevent their movement during transit.

(5) LPG containers must be mounted on a substantial support or a base secured firmly to the conversion vendor unit or medical unit chassis. Neither the container nor its support can extend below the conversion vendor unit or medical unit frame.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1350, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1360 What are the fuel gas piping design requirements for a conversion vendor unit or medical unit? Conversion vendor units or medical units requiring fuel gas for any purpose must be equipped with a gas piping system that is designed for LPG only or combination LPG and natural gas.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1360, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1380 Can gas tubing be concealed in a conversion vendor unit or medical unit? (1) Tubing must not be run inside walls, floors, partitions, or roofs.

(2) If tubing passes through walls, floors, partitions, roofs, or similar installations, the tubing must be protected by the use of weather resistant grommets that snugly fit both the tubing and the hole through which the tubing passes.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1380, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1390 What are the pipe-joint compound requirements for gas piping in a conversion vendor unit or medical unit? (1) Screw joints must be made tight with pipe-joint compound that is insoluble in liquefied petroleum gas.

(2) Pipe-joint compound must be approved for the type of gas used. The pipe-joint compound must be applied to the male threads only.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1390, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1400 What are the gas piping hanger and support requirements for a conversion vendor unit or medical unit? (1) All gas piping must be adequately supported by galvanized or equivalently protected metal straps or hangers at intervals of not more than 4 feet, except where adequate support and protection is provided by structural members.

(2) Gas pipe supply connections must be rigidly anchored to a structural member within 6 inches of the supply connections.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1400, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1410 What are the electrical bonding requirements for gas piping in a conversion vendor unit or medical unit? (1) Gas piping must not be used for an electrical ground.

(2) The gas line must be bonded.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1410, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1420 How are gas supply connections in a conversion vendor unit or medical unit identified? A label must be permanently attached on the outside of the exterior wall of the conversion vendor unit or medical unit adjacent to the gas supply connection which provides the following information:

(1) The type of system (i.e., liquid petroleum system or natural gas system or combination liquid petroleum and natural gas system);

(2) The appropriate Btuh input rating; and

(3) If excess ("or more") Btuh input is allowed.

(4) An example of a label would be: Natural Gas System, 250,000 Btuh or more.

[2000 WAC Supp—page 1408]

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1420, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1430 What requirements apply to gas piping system openings? All openings in the gas piping system must be closed gas-tight with threaded pipe plugs or pipe caps.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1430, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1440 Are gas piping shut-off valves required in a conversion vendor unit or medical unit? (1) In addition to any valve on the appliance, a shut-off valve must be installed in the fuel piping outside of each gas appliance but inside the conversion vendor unit or medical unit structure and upstream of the union or connector. The shut-off valve must be located within six feet of a cooking appliance and within three feet of any other appliance. A shut-off valve may serve more than one appliance if located as required above.

(2) Shut-off valves used in connection with gas piping must be of a type designed for use with liquefied petroleum gas. Shut-off valves must be tested and approved to ANSI Z21.15 standard or equal.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1440, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1450 What requirements apply to testing for gas piping leaks before conversion vendor unit or medical unit appliances are connected? (1) The piping system must stand a pressure of at least 10 psi gauge for a period of not less than 15 minutes without showing any drop in pressure.

(2) Pressure must be measured with a gauge calibrated to be read in increments of not greater than 1/10 pound.

(3) The source of pressure must be isolated before the pressure tests are made. Before a test is begun, the temperature of the ambient air and of the piping must be approximately the same, and constant air temperature must be maintained throughout the test.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1450, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1460 What requirements apply to testing for gas piping leaks after conversion vendor unit or medical unit appliances are connected? (1) After gas appliances have been connected, the gas-piping system must be subjected to a pressure test with the burner valves closed. The test consists of air at not less than 10 inches nor more than 14 inches pressure of water column (6 to 8 ounces). The system must hold this pressure for a period of not less than 10 minutes with no leakage. Before beginning the test, the temperature of the gas-piping system and the test air must be equalized, and this shall be maintained throughout the test.

(2) Appliance shut-off valves ahead of gas cooking appliances may be closed for the performance of this test. When the test is satisfactorily performed, these valves must be opened and, while the system is under pressure, the appli-

appliance connectors must be tested with an approved leak detector or approved bubble solution.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1460, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1470 What are the requirements for appliance installations? (1) The installation of each appliance must conform to the manufacturer's installation instructions. The manufacturer's instructions must be attached to the appliance.

(2) Combustion air inlets and flue gas outlets must be listed as components of the appliance and must be completely separated. The required separation may be obtained by:

(a) The installation of direct vent system (sealed combustion system) appliances; or

(b) The installation of appliances within enclosures so that the appliance combustion system and venting system are separate from the interior atmosphere of the conversion vendor unit or medical unit. There must not be any door, removable access panel, or other opening into the enclosure from the inside of the conversion vendor unit or medical unit. Any openings for ducts, piping, wiring, etc., must be sealed.

(3) Ranges, cooktops, and ovens must not burn outside combustion air.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1470, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1530 What general plumbing requirements apply? This chapter also applies to the installation of plumbing equipment in any conversion vendor unit or medical unit bearing or required to bear a department insignia. Plumbing fixtures, equipment, and installations in conversion vendor units and medical units must conform to the provisions of the Uniform Plumbing Code and the amendments adopted by the State Building Code Council, except part 1, unless specifically exempted or required by this section. However, the following exceptions apply:

(1) We will allow a 1-1/4 inch drain for handwashing sinks with an antisiphon vent.

(2) An antisiphon vent will be allowed on one and two compartment sinks in units as long as there is one vent to the exterior so the system will function. Sinks with three or more compartments must be installed as required by the Uniform Plumbing Code.

(3) Vent pipes may terminate through the roof or through the sidewall at a point as high as possible and not less than six feet from ground level.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1530, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1540 What are the plumbing definitions? Definitions contained in the Uniform Plumbing Code apply to this chapter:

"Drain outlet" is the discharge end of the conversion vendor unit or medical unit main drain to which a drain connector may be attached.

"Main drain" is the principal artery of the conversion vendor unit or medical unit drainage system to which drainage branches may be connected.

"Water-supply connection" is the fitting or point of connection of the conversion vendor unit or medical unit water distribution system to a water connector.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1540, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1550 What requirements apply to drain outlets? Drain outlets must be equipped with a watertight cap or plug that must be permanently attached to the unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1550, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1560 What is the minimum clearance for drain outlets? The drain outlet and couplers must have a minimum clearance of 3 inches in any direction from all parts of the structure or appurtenances and with at least 18 inches unrestricted clearance directly in front of the drain outlet.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1560, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1570 What requirements apply to water-supply connections? Water-supply connections must be equipped with a watertight cap or plug that must be permanently attached to the vehicle.

Note: The department of health may have more restrictive requirements. Before modifying your unit to comply with these requirements, be sure to contact that agency.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1570, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1580 What requirements apply to water heater relief valves and safety devices? (1) All water heaters must be installed with approved fully automatic valve or valves designed to provide temperature and pressure relief. Temperature and pressure relief valves must be tested and approved to ANSI Z21.22 standard or equal.

(2) Any temperature relief valve or combined pressure and temperature relief valve installed for this purpose must have the temperature sensing element immersed in the hottest water within the upper 6 inches of the tank. It must be set to start relieving at a pressure of 150 psi or the rated working pressure of the tank, whichever is lower, and at or below a water temperature of 210 degrees Fahrenheit.

(3) Relief valves must be provided with full-sized drains. Drains must be directed to the exterior of the unit, exiting at least 6 inches above the ground, and must exhaust downward. Drain lines must be of a material approved for hot water distribution and must drain fully by gravity, must not be trapped, and must not have their outlets threaded.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1580, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1590 What requirements apply to waste holding tanks for conversion vendor units? Conversion vendor units may use either portable waste holding tanks approved by the department of health or permanently mounted waste holding tanks.

(1) All portable waste holding tanks must be listed for the intended use and used per their listing.

(2) All permanently mounted waste holding tanks must meet the following specifications:

(a) Tanks must be listed for the intended use, installed per their listing, and be securely installed to prevent displacement during transportation;

(b) Tanks must be easily removable for service, repair or replacement without having to remove any permanent construction;

(c) Neither the inlet nor vent fitting may extend downward into the tank more than 1-1/2 inches;

(d) The drain opening must be located at the lowest point of the tank;

(e) Tanks must be vented at the highest point in the top of the tank by one of the following methods:

(i) A 1-1/4 inch diameter vent pipe;

(ii) A continuous vent serving as a drain from one additional fixture provided the drain portion is increased one pipe size larger than the connected trap arm;

(iii) Two or more vented drains when at least one is wet-vented and each drain is separately connected to the top of the tank;

(f) A fullway termination valve must be installed in the tank; and

(g) No drain connection may be made between liquid and body waste holding tanks upstream of fullway termination valves.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1590, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-3000 Conversion vendor units and medical units—Fees.

WAC 296-150V-3000 CONVERSION VENDOR UNITS AND MEDICAL UNITS	
INITIAL FILING FEE	\$28.00
DESIGN PLAN FEES:	
INITIAL FEE - MASTER DESIGN	\$192.00
INITIAL FEE - ONE YEAR DESIGN	\$78.75
RENEWAL FEE	\$33.75
RESUBMIT FEE	\$56.25
ADDENDUM (Approval expires on same date as original plan)	\$56.25
RECIPROCAL PLAN REVIEW: (Pending)	
INITIAL FEE-MASTER DESIGN	\$85.75
INITIAL FEE-ONE YEAR DESIGN	\$52.00
RENEWAL FEE	\$52.00
ADDENDUM	\$52.00
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$10.75
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$56.25
TRAVEL (Per hour)*	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$56.25
TRAVEL (Per hour*)	\$56.25
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
FIRST SECTION	\$16.50
ALTERATION	\$28.00
REISSUED-LOST/DAMAGED	\$10.75
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$56.25
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free copy per year)	\$10.75
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in ½ hour increments	
** Per state guidelines	
*** Actual charges incurred	

[Statutory Authority: Chapter 43.22 RCW, 99-18-069, § 296-150V-3000, filed 8/31/99, effective 10/1/99.]

**Chapter 296-155 WAC
SAFETY STANDARDS FOR CONSTRUCTION
WORK**

WAC

- 296-155-120 First-aid training and certification.
- 296-155-125 First-aid supplies.
- 296-155-130 First-aid station.
- 296-155-135 Repealed.
- 296-155-17317 Respiratory protection.

- 296-155-17335 Repealed.
- 296-155-17337 Appendices.
- 296-155-17341 Appendix A to WAC 296-155-173—Substance data sheet, for 4-4'-methylenedianiline.
- 296-155-17349 Repealed.
- 296-155-17351 Repealed.
- 296-155-17353 Repealed.
- 296-155-17355 Repealed.
- 296-155-17357 Repealed.
- 296-155-17359 Repealed.
- 296-155-174 Cadmium.
- 296-155-17613 Respiratory protection.
- 296-155-17625 Employee information and training.
- 296-155-17635 Repealed.
- 296-155-17652 Appendix B to WAC 296-155-176—Employee standard summary.

296-155-17656	Repealed.
296-155-220	Respiratory protection.
296-155-270	Flammable and combustible liquids.
296-155-367	Masonry saws.
296-155-615	Material handling equipment.
296-155-655	General protection requirements.
296-155-66403	Appendix B—Sloping and benching.
296-155-730	Tunnels and shafts.

**DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER**

296-155-135	First-aid room. [Order 74-26, § 296-155-135, filed 5/7/74, effective 6/6/74.] Repealed by 00-01-038, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17335	Effective date. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17335, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17349	Appendix E to WAC 296-155-173—Methylenedianiline—Qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17349, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17351	Appendix E-1—Qualitative protocols. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17351, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17353	Appendix E-1-a—Isoamyl acetate (banana oil) protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17353, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17355	Appendix E-1-b—Saccharin solution aerosol protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17355, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17357	Appendix E-1-c—Irritant fume protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17357, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17359	Appendix E-2—Quantitative fit test procedures. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17359, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17635	Startup dates. [Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17635, filed 10/29/93, effective 12/10/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-155-17656	Appendix D to WAC 296-155-176—Qualitative and quantitative fit test protocols. [Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17656, filed 10/29/93, effective 12/10/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-155-120 First-aid training and certification. This section is designed to assure that all employees in this state are afforded quick and effective first-aid attention in the event of an on the job injury. To achieve this purpose the presence of personnel trained in first-aid procedures at or near those places where employees are working is required. Compliance with the provisions of this section may require the presence of more than one first-aid trained person.

[2000 WAC Supp—page 1412]

(1) The first-aid training requirements of the general safety and health standards, chapter 296-24 WAC, Part A-1 apply within the scope of chapter 296-155 WAC.

(2) Each employer must have available at all worksites, where a crew is present, a person or persons holding a valid first-aid certificate.

(3) All crew leaders, supervisors or persons in direct charge of one or more employees must have a valid first-aid certificate.

(4) For the purposes of this section, a crew means a group of two or more employees working at any worksite.

Note: The requirement that all crew leaders, supervisors or person in direct charge of one or more employees (subsection (3) of this section) applies even if other first-aid trained person(s) are available. In emergencies, crew leaders will be permitted to work up to thirty days without having the required certificate, providing an employee in the crew or another crew leaders in the immediate work area has the necessary certificate.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-155-120, filed 12/7/99, effective 2/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-155-120, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-120, filed 1/21/86; Order 74-26, § 296-155-120, filed 5/7/74, effective 6/6/74.]

WAC 296-155-125 First-aid supplies. (1) The first-aid kits and supplies requirements of the general safety and health standards, chapter 296-24 WAC, Part A-1 apply within the scope of chapter 296-155 WAC.

(2) All vehicles used to transport work crews must be equipped with first-aid supplies.

(3) When practical, a poster must be fastened and maintained either on or in the cover of each first-aid kit and at or near all phones plainly stating the worksite address or location, and the phone numbers of emergency medical responders for the worksite.

(4) Requirements of WAC 296-62-130, Emergency washing facilities, apply within the scope of chapter 296-155 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-155-125, filed 12/7/99, effective 2/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-155-125, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-125, filed 1/21/86; Order 74-26, § 296-155-125, filed 5/7/74, effective 6/6/74.]

WAC 296-155-130 First-aid station. Employers with fifty or more employees per shift at one location must establish a first-aid station in accordance with the requirements in chapter 296-24 WAC, Part A-1.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-155-130, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-130, filed 1/21/86; Order 74-26, § 296-155-130, filed 5/7/74, effective 6/6/74.]

WAC 296-155-135 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17317 Respiratory protection. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply

with the requirements of this section. Respirators must be used during:

- (a) Periods necessary to install or implement feasible engineering and work-practice controls.
- (b) Work operations, such as maintenance and repair activities and spray application processes, for which engineering and work-practice controls are not feasible.
- (c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the PELs.

(d) Emergencies.

(2) Respirator program. The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through WAC 296-62-07156).

(3) Respirator selection.

(a) The employer must select the appropriate respirator from Table 1 of this section.

Table 1.—Respiratory Protection for MDA

Airborne concentration of MDA or condition of use	Respirator type
a. Less than or equal to 10xPEL	(1) Half-mask respirator with HEPA ¹ cartridge. ²
b. Less than or equal to 50xPEL	(1) Full facepiece respirator with HEPA ¹ cartridge or canister. ²
c. Less than or equal to 1000xPEL	(1) Full facepiece powered air-purifying respirator with HEPA ¹ cartridges. ²
d. Greater than 1000xPEL or unknown	(1) Self-contained breathing concentration apparatus with full facepiece in positive pressure mode; (2) Full facepiece positive-pressure demand supplied-air respirator with auxiliary self-contained air supply.
e. Escape	(1) Any full facepiece air-purifying respirator with HEPA ¹ cartridges; ² (2) Any positive pressure or continuous flow self-contained breathing apparatus with full facepiece or hood.
f. Fire fighting	(1) Full facepiece self-contained breathing apparatus in positive pressure mode.

Note: Respirators assigned for higher environmental concentration may be used at lower concentrations.

¹High efficiency particulate in air filter (HEPA) means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers or larger.

²Combination HEPA/organic vapor cartridges shall be used whenever MDA in liquid form or a process requiring heat is used.

(b) An employee who cannot use a negative-pressure respirator must be given the option of using a positive-pressure respirator, or a supplied-air respirator operated in the continuous-flow or pressure-demand mode.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-17317, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17317, filed 2/3/93, effective 3/15/93.]

WAC 296-155-17335 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17337 Appendices. The information contained in Appendices A, B, C, and D of this standard is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-17337, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17337, filed 2/3/93, effective 3/15/93.]

WAC 296-155-17341 Appendix A to WAC 296-155-173—Substance data sheet, for 4-4'-methylenedianiline.

(1) Substance identification.

(a) Substance: Methylenedianiline (MDA).

(b) Permissible exposure:

(i) Airborne: Ten parts per billion parts of air (10 ppb), time-weighted average (TWA) for an 8-hour workday and an action level of five parts per billion parts of air (5 ppb).

(ii) Dermal: Eye contact and skin contact with MDA are not permitted.

(c) Appearance and odor: White to tan solid; amine odor.

(2) Health hazard data.

(a) Ways in which MDA affects your health. MDA can affect your health if you inhale it or if it comes in contact with your skin or eyes. MDA is also harmful if you happen to swallow it. Do not get MDA in eyes, on skin, or on clothing.

(b) Effects of overexposure.

(i) Short-term (acute) overexposure: Overexposure to MDA may produce fever, chills, loss of appetite, vomiting, jaundice. Contact may irritate skin, eyes, and mucous membranes. Sensitization may occur.

(ii) Long-term (chronic) exposure. Repeated or prolonged exposure to MDA, even at relatively low concentrations, may cause cancer. In addition, damage to the liver, kidneys, blood, and spleen may occur with long-term exposure.

(iii) Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms which you suspect are caused by exposure to MDA including yellow staining of the skin.

(3) Protective clothing and equipment.

(a) Respirators. Respirators are required for those operations in which engineering controls or work practice controls are not adequate or feasible to reduce exposure to the permissible limit. If respirators are worn, they must be certified by the National Institute for Occupational Safety and Health (NIOSH) under 42 CFR part 84, and cartridges or canisters must be replaced as necessary to maintain the effectiveness of the respirator. If you experience difficulty breathing while wearing a respirator, you may request a positive-pressure respirator from your employer. You must be thoroughly trained to use the assigned respirator, and the training will be provided by your employer. MDA does not have a detectable odor except at levels well above the permissible exposure limits. Do not depend on odor to warn you when a respirator canister is exhausted. If you can smell MDA while wearing a respirator, proceed immediately to fresh air. If you experience difficulty breathing while wearing a respirator, tell your employer.

(b) Protective clothing. You may be required to wear coveralls, aprons, gloves, face shields, or other appropriate protective clothing to prevent skin contact with MDA. Where protective clothing is required, your employer is required to provide clean garments to you, as necessary, to assure that the clothing protects you adequately. Replace or repair impervious clothing that has developed leaks. MDA should never be allowed to remain on the skin. Clothing and shoes which are not impervious to MDA should not be allowed to become contaminated with MDA, and if they do, the clothing and shoes should be promptly removed and decontaminated. The clothing should be laundered to remove MDA or discarded. Once MDA penetrates shoes or other leather articles, they should not be worn again.

(c) Eye protection. You must wear splashproof safety goggles in areas where liquid MDA may contact your eyes. Contact lenses should not be worn in areas where eye contact with MDA can occur. In addition, you must wear a face shield if your face could be splashed with MDA liquid.

(4) Emergency and first aid procedures.

(a) Eye and face exposure. If MDA is splashed into the eyes, wash the eyes for at least 15 minutes. See a doctor as soon as possible.

(b) Skin exposure. If MDA is spilled on your clothing or skin, remove the contaminated clothing and wash the exposed skin with large amounts of soap and water immediately. Wash contaminated clothing before you wear it again.

(c) Breathing. If you or any other person breathes in large amounts of MDA, get the exposed person to fresh air at once. Apply artificial respiration if breathing has stopped. Call for medical assistance or a doctor as soon as possible. Never enter any vessel or confined space where the MDA concentration might be high without proper safety equipment and at least one other person present who will stay outside. A life line should be used.

(d) Swallowing. If MDA has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.

(5) Medical requirements. If you are exposed to MDA at a concentration at or above the action level for more than 30 days per year, or exposed to liquid mixtures more than 15 days per year, your employer is required to provide a medical examination, including a medical history and laboratory tests, within 60 days of the effective date of this standard and annually thereafter. These tests shall be provided without cost to you. In addition, if you are accidentally exposed to MDA (either by ingestion, inhalation, or skin/eye contact) under conditions known or suspected to constitute toxic exposure to MDA, your employer is required to make special examinations and tests available to you.

(6) Observation of monitoring. Your employer is required to perform measurements that are representative of your exposure to MDA and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn; you and your representative must also be provided with, and must wear, the protective clothing and equipment.

(7) Access to records. You or your representative are entitled to see the records of measurements of your exposure to MDA upon written request to your employer. Your medical examination records can be furnished to your physician or designated representative upon request by you to your employer.

(8) Precautions for safe use, handling, and storage.

(a) Material is combustible. Avoid strong acids and their anhydrides. Avoid strong oxidants. Consult supervisor for disposal requirements.

(b) Emergency clean-up. Wear self-contained breathing apparatus and fully clothe the body in the appropriate personal protective clothing and equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-17341, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17341, filed 2/3/93, effective 3/15/93.]

WAC 296-155-17349 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17351 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17353 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17355 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17357 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17359 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-174 Cadmium. (1) Scope. This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, in all construction work where an employee may potentially be exposed to cadmium. Construction work is defined as work involving construction, alteration, and/or repair, including but not limited to the following:

(a) Wrecking, demolition, or salvage of structures where cadmium or materials containing cadmium are present;

(b) Use of cadmium containing-paints and cutting, brazing, burning, grinding, or welding on surfaces that were painted with cadmium-containing paints;

(c) Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain cadmium, or materials containing cadmium;

(d) Cadmium welding; cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys;

(e) Installation of products containing cadmium;

(f) Electrical grounding with cadmium-welding, or electrical work using cadmium-coated conduit;

(g) Maintaining or retrofitting cadmium-coated equipment;

(h) Cadmium contamination/emergency cleanup; and

(i) Transportation, disposal, storage, or containment of cadmium or materials containing cadmium on the site or location at which construction activities are performed.

(2) Definitions.

(a) Action level (AL) is defined as an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air ($2.5 \mu\text{g}/\text{m}^3$), calculated as an 8-hour time-weighted average (TWA).

(b) Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas or any person authorized by WISHA or regulations issued under it to be in regulated areas.

(c) Competent person, in accordance with WAC 296-155-012(4), means a person designated by the employer to act on the employer's behalf who is capable of identifying existing and potential cadmium hazards in the workplace and the proper methods to control them in order to protect workers, and has the authority necessary to take prompt corrective measures to eliminate or control such hazards. The duties of a competent person include at least the following: Determining prior to the performance of work whether cadmium is present in the workplace; establishing, where necessary, regulated areas and assuring that access to and from those areas is limited to authorized employees; assuring the adequacy of any employee exposure monitoring required by this standard; assuring that all employees exposed to air cadmium levels above the PEL wear appropriate personal protective equipment and are trained in the use of appropriate methods of exposure control; assuring that proper hygiene facilities are provided and that workers are trained to use those facilities; and assuring that the engineering controls required by this standard are implemented, maintained in proper operating condition, and functioning properly.

(d) Director means the director of the department of labor and industries or authorized representative.

(e) Employee exposure and similar language referring to the air cadmium level to which an employee is exposed means the exposure to airborne cadmium that would occur if the employee were not using respiratory protective equipment.

(f) Final medical determination is the written medical opinion of the employee's health status by the examining physician under subsection (12)(c) through (l) of this section or, if multiple physician review under subsection (12)(m) of this section or the alternative physician determination under subsection (12)(n) of this section is invoked, it is the final, written medical finding, recommendation or determination that emerges from that process.

(g) High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of mono-dispersed particles of 0.3 micrometers in diameter.

(h) Regulated area means an area demarcated by the employer where an employee's exposure to airborne concentrations of cadmium exceeds, or can reasonably be expected to exceed the permissible exposure limit (PEL).

(i) This section means this cadmium standard.

(3) Permissible exposure limit (PEL). The employer shall assure that no employee is exposed to an airborne concentration of cadmium in excess of five micrograms per

cubic meter of air ($5 \mu\text{g}/\text{m}^3$), calculated as an 8-hour time-weighted average exposure (TWA).

(4) Exposure monitoring

(a) General.

(i) Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level. The employer shall designate a competent person who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination. Investigation shall include a review of relevant plans, past reports, material safety data sheets, and other available records, and consultations with the property owner and discussions with appropriate individuals and agencies.

(ii) Where cadmium has been determined to be present in the workplace, and it has been determined that there is a possibility the employee's exposure will be at or above the action level, the competent person shall identify employees potentially exposed to cadmium at or above the action level.

(iii) Determinations of employee exposure shall be made from breathing-zone air samples that reflect the monitored employee's regular, daily 8-hour TWA exposure to cadmium.

(iv) Eight-hour TWA exposures shall be determined for each employee on the basis of one or more personal breathing-zone air samples reflecting full shift exposure on each shift, for each job classification, in each work area. Where several employees perform the same job tasks, in the same job classification, on the same shift, in the same work area, and the length, duration, and level of cadmium exposures are similar, an employer may sample a representative fraction of the employees instead of all employees in order to meet this requirement. In representative sampling, the employer shall sample the employee(s) expected to have the highest cadmium exposures.

(b) Specific.

(i) Initial monitoring. Except as provided for in (b)(iii) of this subsection, where a determination conducted under (a)(i) of this subsection shows the possibility of employee exposure to cadmium at or above the action level, the employer shall conduct exposure monitoring as soon as practicable that is representative of the exposure for each employee in the workplace who is or may be exposed to cadmium at or above the action level.

(ii) In addition, if the employee periodically performs tasks that may expose the employee to a higher concentration of airborne cadmium, the employee shall be monitored while performing those tasks.

(iii) Where the employer has objective data, as defined in subsection (14)(b) of this section, demonstrating that employee exposure to cadmium will not exceed airborne concentrations at or above the action level under the expected conditions of processing, use, or handling, the employer may rely upon such data instead of implementing initial monitoring.

(iv) Where a determination conducted under (a) or (b) of this subsection is made that a potentially exposed employee is not exposed to airborne concentrations of cadmium at or

above the action level, the employer shall make a written record of such determination. The record shall include at least the monitoring data developed under (b)(i) through (iii) of this subsection, where applicable, and shall also include the date of determination, and the name and Social Security number of each employee.

(c) Monitoring frequency (periodic monitoring).

(i) If the initial monitoring or periodic monitoring reveals employee exposures to be at or above the action level, the employer shall monitor at a frequency and pattern needed to assure that the monitoring results reflect with reasonable accuracy the employee's typical exposure levels, given the variability in the tasks performed, work practices, and environmental conditions on the job site, and to assure the adequacy of respiratory selection and the effectiveness of engineering and work practice controls.

(ii) If the initial monitoring or the periodic monitoring indicates that employee exposures are below the action level and that result is confirmed by the results of another monitoring taken at least seven days later, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

(d) Additional monitoring. The employer also shall institute the exposure monitoring required under (b)(i) and (c) of this subsection whenever there has been a change in the raw materials, equipment, personnel, work practices, or finished products that may result in additional employees being exposed to cadmium at or above the action level or in employees already exposed to cadmium at or above the action level being exposed above the PEL, or whenever the employer or competent person has any reason to suspect that any other change might result in such further exposure.

(e) Employee notification of monitoring results.

(i) No later than five working days after the receipt of the results of any monitoring performed under this section, the employer shall notify each affected employee individually in writing of the results. In addition, within the same time period, the employer shall post the results of the exposure monitoring in an appropriate location that is accessible to all affected employees.

(ii) Wherever monitoring results indicate that employee exposure exceeds the PEL, the employer shall include in the written notice a statement that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to or below the PEL.

(f) Accuracy of measurement. The employer shall use a method of monitoring and analysis that has an accuracy of not less than plus or minus 25 percent ($\pm 25\%$), with a confidence level of 95 percent, for airborne concentrations of cadmium at or above the action level and the permissible exposure limit.

(5) Regulated areas.

(a) Establishment. The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of cadmium is, or can reasonably be expected to be in excess of the permissible exposure limit (PEL).

(b) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in any manner that adequately establishes and alerts employees of the boundaries of the regulated area, including employees who are or may be incidentally

in the regulated areas, and that protects persons outside the area from exposure to airborne concentrations of cadmium in excess of the PEL.

(c) Access. Access to regulated areas shall be limited to authorized persons.

(d) Provision of respirators. Each person entering a regulated area shall be supplied with and required to use a respirator, selected in accordance with subsection (7)(b) of this section.

(e) Prohibited activities. The employer shall assure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas, or carry the products associated with any of these activities into regulated areas or store such products in those areas.

(6) Methods of compliance.

(a) Compliance hierarchy.

(i) Except as specified in (a)(ii) of this subsection, the employer shall implement engineering and work practice controls to reduce and maintain employee exposure to cadmium at or below the PEL, except to the extent that the employer can demonstrate that such controls are not feasible.

(ii) The requirement to implement engineering controls to achieve the PEL does not apply where the employer demonstrates the following:

(A) The employee is only intermittently exposed; and

(B) The employee is not exposed above the PEL on 30 or more days per year (12 consecutive months).

(iii) Wherever engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, the employer nonetheless shall implement such controls to reduce exposures to the lowest levels achievable. The employer shall supplement such controls with respiratory protection that complies with the requirements of subsection (7) of this section and the PEL.

(iv) The employer shall not use employee rotation as a method of compliance.

(b) Specific operations.

(i) Abrasive blasting. Abrasive blasting on cadmium or cadmium-containing materials shall be conducted in a manner that will provide adequate protection.

(ii) Heating cadmium and cadmium-containing materials. Welding, cutting, and other forms of heating of cadmium or cadmium-containing materials shall be conducted in accordance with the requirements of WAC 296-155-415 and 296-155-420, where applicable.

(c) Prohibitions.

(i) High speed abrasive disc saws and similar abrasive power equipment shall not be used for work on cadmium or cadmium-containing materials unless they are equipped with appropriate engineering controls to minimize emissions, if the exposure levels are above the PEL.

(ii) Materials containing cadmium shall not be applied by spray methods, if exposures are above the PEL, unless employees are protected with supplied-air respirators with full facepiece, hood, helmet, suit, operated in positive pressure mode and measures are instituted to limit overspray and prevent contamination of adjacent areas.

(d) Mechanical ventilation.

(i) When ventilation is used to control exposure, measurements that demonstrate the effectiveness of the system in

controlling exposure, such as capture velocity, duct velocity, or static pressure shall be made as necessary to maintain its effectiveness.

(ii) Measurements of the system's effectiveness in controlling exposure shall be made as necessary within five working days of any change in production, process, or control that might result in a significant increase in employee exposure to cadmium.

(iii) Recirculation of air. If air from exhaust ventilation is recirculated into the workplace, the system shall have a high efficiency filter and be monitored to assure effectiveness.

(iv) Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters is being conducted.

(e) Compliance program.

(i) Where employee exposure to cadmium exceeds the PEL and the employer is required under (a) of this subsection to implement controls to comply with the PEL, prior to the commencement of the job the employer shall establish and implement a written compliance program to reduce employee exposure to or below the PEL. To the extent that engineering and work practice controls cannot reduce exposures to or below the PEL, the employer shall include in the written compliance program the use of appropriate respiratory protection to achieve compliance with the PEL.

(ii) Written compliance programs shall be reviewed and updated as often and as promptly as necessary to reflect significant changes in the employer's compliance status or significant changes in the lowest air cadmium level that is technologically feasible.

(iii) A competent person shall review the comprehensive compliance program initially and after each change.

(iv) Written compliance programs shall be provided upon request for examination and copying to the director, or authorized representatives, affected employees, and designated employee representatives.

(7) Respirator protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this section. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls when employee exposures exceed the PEL.

(ii) Maintenance and repair activities, and brief or intermittent operations, for which employee exposures exceed the PEL and engineering and work-practice controls are not feasible or are not required.

(iii) Work operations in regulated areas specified in subsection (5) of this section.

(iv) Work operations for which the employer has implemented all feasible engineering and work-practice controls, and such controls are not sufficient to reduce exposures to or below the PEL.

(v) Emergencies.

(vi) Work operations for which an employee, who is exposed to cadmium at or above the action level, requests a respirator.

(vii) Work operations for which engineering controls are not required under (a)(ii) of this subsection to reduce employee exposures that exceed the PEL.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and WAC 296-62-07150 through WAC 296-62-07156).

(ii) If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination as required by subsection (12)(f)(ii) of this section to determine if the employee can use a respirator while performing the required duties.

(iii) No employees must use a respirator when, based on their recent medical examination, the examining physician determines that the employee will be unable to continue to function normally while using a respirator. If the physician determines the employee must be limited in, or removed from, their current job because of the employee's inability to use a respirator, the job limitation or removal must be conducted as required by (k) and (l) of this subsection.

(c) Respirator selection.

(i) The employer must select the appropriate respirator from Table 1 of this section.

Airborne concentration or condition of use ^a	Required respirator type ^b
10 x or less	A half-mask, air-purifying respirator equipped with a HEPA ^c filter. ^d
25 x or less	A powered air-purifying respirator ("PAPR") with a loose-fitting hood or helmet equipped with a HEPA filter, or a supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous flow mode.
50 x or less	A full facepiece air-purifying respirator equipped with a HEPA filter, or a powered air-purifying respirator with a tight-fitting half-mask equipped with a HEPA filter, or a supplied air respirator with a tight-fitting half-mask operated in the continuous flow mode.
250 x or less	A powered air-purifying respirator with a tight-fitting full facepiece equipped with a HEPA filter, or a supplied-air respirator with a tight-fitting full facepiece operated in the continuous flow mode.

Table 1

Respiratory Protection for Cadmium

Airborne concentration or condition of use ^a	Required respirator type ^b
1000 x or less	A supplied-air respirator with half-mask or full facepiece operated in the pressure demand or other positive pressure mode.
>1000 x or unknown concentrations	A self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode, or a supplied-air respirator with a full facepiece operated in the pressure demand or other positive pressure mode and equipped with an auxiliary escape type self-contained breathing apparatus operated in the pressure demand mode.
Fire fighting	A self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Note: ^aConcentrations expressed as multiple of the PEL.

^b Respirators assigned for higher environmental concentrations may be used at lower exposure levels. Quantitative fit testing is required for all tight-fitting air purifying respirators where airborne concentration of cadmium exceeds 10 times the TWA PEL ($10 \times 5 \mu\text{g}/\text{m}^3 = 50 \mu\text{g}/\text{m}^3$). A full facepiece respirator is required when eye irritation is experienced.

^c HEPA means High Efficiency Particulate Air.

^d Fit testing, qualitative or quantitative, is required.

Source: Respiratory Decision Logic, NIOSH, 1987.

(ii) The employer shall provide a powered, air-purifying respirator (PAPR) instead of a negative-pressure respirator when an employee entitled to a respirator chooses to use this type of respirator and such a respirator will provide adequate protection to the employee.

(8) Emergency situations. The employer shall develop and implement a written plan for dealing with emergency situations involving substantial releases of airborne cadmium. The plan shall include provisions for the use of appropriate respirators and personal protective equipment. In addition, employees not essential to correcting the emergency situation shall be restricted from the area and normal operations halted in that area until the emergency is abated.

(9) Protective work clothing and equipment

(a) Provision and use. If an employee is exposed to airborne cadmium above the PEL or where skin or eye irritation is associated with cadmium exposure at any level, the employer shall provide at no cost to the employee, and assure that the employee uses, appropriate protective work clothing and equipment that prevents contamination of the employee and the employee's garments. Protective work clothing and equipment includes, but is not limited to:

(i) Coveralls or similar full-body work clothing;
(ii) Gloves, head coverings, and boots or foot coverings;
and

(iii) Face shields, vented goggles, or other appropriate protective equipment that complies with WAC 296-155-215.

(b) Removal and storage.

(i) The employer shall assure that employees remove all protective clothing and equipment contaminated with cadmium at the completion of the work shift and do so only in change rooms provided in accordance with subsection (10)(a) of this section.

(ii) The employer shall assure that no employee takes cadmium-contaminated protective clothing or equipment from the workplace, except for employees authorized to do so for purposes of laundering, cleaning, maintaining, or disposing of cadmium-contaminated protective clothing and equipment at an appropriate location or facility away from the workplace.

(iii) The employer shall assure that contaminated protective clothing and equipment, when removed for laundering, cleaning, maintenance, or disposal, is placed and stored in sealed, impermeable bags or other closed, impermeable containers that are designed to prevent dispersion of cadmium dust.

(iv) The employer shall assure that containers of contaminated protective clothing and equipment that are to be taken out of the change rooms or the workplace for laundering, cleaning, maintenance or disposal shall bear labels in accordance with subsection (13)(c) of this section.

(c) Cleaning, replacement, and disposal.

(i) The employer shall provide the protective clothing and equipment required by (a) of this subsection in a clean and dry condition as often as necessary to maintain its effectiveness, but in any event at least weekly. The employer is responsible for cleaning and laundering the protective clothing and equipment required by this subsection to maintain its effectiveness and is also responsible for disposing of such clothing and equipment.

(ii) The employer also is responsible for repairing or replacing required protective clothing and equipment as needed to maintain its effectiveness. When rips or tears are detected while an employee is working they shall be immediately mended, or the worksuit shall be immediately replaced.

(iii) The employer shall prohibit the removal of cadmium from protective clothing and equipment by blowing, shaking, or any other means that disperses cadmium into the air.

(iv) The employer shall assure that any laundering of contaminated clothing or cleaning of contaminated equipment in the workplace is done in a manner that prevents the release of airborne cadmium in excess of the permissible exposure limit prescribed in subsection (3) of this section.

(v) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with cadmium of the potentially harmful effects of exposure to cadmium, and that the clothing and equipment should be laundered or cleaned in a manner to effectively prevent the release of airborne cadmium in excess of the PEL.

(10) Hygiene areas and practices.

(a) General. For employees whose airborne exposure to cadmium is above the PEL, the employer shall provide clean

change rooms, handwashing facilities, showers, and lunchroom facilities that comply with WAC 296-155-140.

(b) Change rooms. The employer shall assure that change rooms are equipped with separate storage facilities for street clothes and for protective clothing and equipment, which are designed to prevent dispersion of cadmium and contamination of the employee's street clothes.

(c) Showers and handwashing facilities.

(i) The employer shall assure that employees whose airborne exposure to cadmium is above the PEL shower during the end of the work shift.

(ii) The employer shall assure that employees who are exposed to cadmium above the PEL wash their hands and faces prior to eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics.

(d) Lunchroom facilities.

(i) The employer shall assure that the lunchroom facilities are readily accessible to employees, that tables for eating are maintained free of cadmium, and that no employee in a lunchroom facility is exposed at any time to cadmium at or above a concentration of 2.5 µg/m³.

(ii) The employer shall assure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface cadmium has been removed from the clothing and equipment by HEPA vacuuming or some other method that removes cadmium dust without dispersing it.

(11) Housekeeping.

(a) All surfaces shall be maintained as free as practicable of accumulations of cadmium.

(b) All spills and sudden releases of material containing cadmium shall be cleaned up as soon as possible.

(c) Surfaces contaminated with cadmium shall, wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of cadmium becoming airborne.

(d) HEPA-filtered vacuuming equipment or equally effective filtration methods shall be used for vacuuming. The equipment shall be used and emptied in a manner that minimizes the reentry of cadmium into the workplace.

(e) Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other methods that minimize the likelihood of cadmium becoming airborne have been tried and found not to be effective.

(f) Compressed air shall not be used to remove cadmium from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the dust cloud created by the compressed air.

(g) Waste, scrap, debris, bags, containers, personal protective equipment, and clothing contaminated with cadmium and consigned for disposal shall be collected and disposed of in sealed impermeable bags or other closed, impermeable containers. These bags and containers shall be labeled in accordance with subsection (13)(b) of this section.

(12) Medical surveillance.

(a) General.

(i) Scope.

(A) Currently exposed—The employer shall institute a medical surveillance program for all employees who are or may be exposed at or above the action level and all employees who perform the following tasks, operations, or jobs:

Electrical grounding with cadmium-welding; cutting, brazing, burning, grinding, or welding on surfaces that were painted with cadmium-containing paints; electrical work using cadmium-coated conduit; use of cadmium containing paints; cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys; fusing of reinforced steel by cadmium welding; maintaining or retrofitting cadmium-coated equipment; and, wrecking and demolition where cadmium is present. A medical surveillance program will not be required if the employer demonstrates that the employee:

(I) Is not currently exposed by the employer to airborne concentrations of cadmium at or above the action level on 30 or more days per year (twelve consecutive months); and

(II) Is not currently exposed by the employer in those tasks on 30 or more days per year (twelve consecutive months).

(B) Previously exposed—The employer shall also institute a medical surveillance program for all employees who might previously have been exposed to cadmium by the employer prior to the effective date of this section in tasks specified under (a)(i)(A) of this subsection, unless the employer demonstrates that the employee did not in the years prior to the effective date of this section work in those tasks for the employer with exposure to cadmium for an aggregated total of more than 12 months.

(ii) To determine an employee's fitness for using a respirator, the employer shall provide the limited medical examination specified in (f) of this subsection.

(iii) The employer shall assure that all medical examinations and procedures required by this section are performed by or under the supervision of a licensed physician, who has read and is familiar with the health effects WAC 296-62-07441, Appendix A, the regulatory text of this section, the protocol for sample handling and lab selection in WAC 296-62-07451, Appendix F, and the questionnaire of WAC 296-62-07447, Appendix D.

(iv) The employer shall provide the medical surveillance required by this section, including multiple physician review under (m) of this subsection without cost to employees, and at a time and place that is reasonable and convenient to employees.

(v) The employer shall assure that the collecting and handling of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (B₂-M) taken from employees under this section is done in a manner that assures their reliability and that analysis of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (B₂-M) taken from employees under this section is performed in laboratories with demonstrated proficiency to perform the particular analysis. (See WAC 296-62-07451, Appendix F.)

(b) Initial examination.

(i) For employees covered by medical surveillance under (a)(i) of this subsection, the employer shall provide an initial medical examination. The examination shall be provided to those employees within 30 days after initial assignment to a job with exposure to cadmium or no later than 90 days after the effective date of this section, whichever date is later.

(ii) The initial medical examination shall include:

(A) A detailed medical and work history, with emphasis on: Past, present, and anticipated future exposure to cadmium; any history of renal, cardiovascular, respiratory, hematopoietic, reproductive, and/or musculo-skeletal system dysfunction; current usage of medication with potential nephrotoxic side-effects; and smoking history and current status; and

(B) Biological monitoring that includes the following tests:

(I) Cadmium in urine (CdU), standardized to grams of creatinine (g/Cr);

(II) Beta-2 microglobulin in urine (B₂-M), standardized to grams of creatinine (g/Cr), with pH specified, as described in WAC 296-62-07451, Appendix F; and

(III) Cadmium in blood (CdB), standardized to liters of whole blood (lwb).

(iii) Recent examination: An initial examination is not required to be provided if adequate records show that the employee has been examined in accordance with the requirements of (b)(ii) of this subsection within the past 12 months. In that case, such records shall be maintained as part of the employee's medical record and the prior exam shall be treated as if it were an initial examination for the purposes of (c) and (d) of this subsection.

(c) Actions triggered by initial biological monitoring.

(i) If the results of the biological monitoring tests in the initial examination show the employee's CdU level to be at or below 3 µg/g Cr, B₂-M level to be at or below 300 µg/g Cr and CdB level to be at or below 5 µg/lwb, then:

(A) For employees who are subject to medical surveillance under (a)(i)(A) of this subsection because of current or anticipated exposure to cadmium, the employer shall provide the minimum level of periodic medical surveillance in accordance with the requirements in (d)(i) of this subsection; and

(B) For employees who are subject to medical surveillance under (a)(i)(B) of this subsection because of prior but not current exposure, the employer shall provide biological monitoring for CdU, B₂-M, and CdB one year after the initial biological monitoring and then the employer shall comply with the requirements of (d)(vi) of this subsection.

(ii) For all employees who are subject to medical surveillance under (a)(i) of this subsection, if the results of the initial biological monitoring tests show the level of CdU to exceed 3 µg/g Cr, the level of B₂-M to be in excess of 300 µg/g Cr, or the level of CdB to be in excess of 5 µg/lwb, the employer shall:

(A) Within two weeks after receipt of biological monitoring results, reassess the employee's occupational exposure to cadmium as follows:

(I) Reassess the employee's work practices and personal hygiene;

(II) Reevaluate the employee's respirator use, if any, and the respirator program;

(III) Review the hygiene facilities;

(IV) Reevaluate the maintenance and effectiveness of the relevant engineering controls;

(V) Assess the employee's smoking history and status;

(B) Within 30 days after the exposure reassessment, specified in (c)(ii)(A) of this subsection, take reasonable

steps to correct any deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium; and

(C) Within 90 days after receipt of biological monitoring results, provide a full medical examination to the employee in accordance with the requirements of (d)(ii) of this subsection. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. If the physician determines that medical removal is not necessary, then until the employee's CdU level falls to or below 3 µg/g Cr, B₂-M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall:

(I) Provide biological monitoring in accordance with (b)(ii)(B) of this subsection on a semiannual basis; and

(II) Provide annual medical examinations in accordance with (d)(ii) of this subsection.

(iii) For all employees who are subject to medical surveillance under (a)(i) of this subsection, if the results of the initial biological monitoring tests show the level of CdU to be in excess of 15 µg/g Cr, or the level of CdB to be in excess of 15 µg/lwb, or the level of B₂-M to be in excess of 1,500 µg/g Cr, the employer shall comply with the requirements of (c)(ii)(A) and (B) of this subsection. Within 90 days after receipt of biological monitoring results, the employer shall provide a full medical examination to the employee in accordance with the requirements of (d)(ii) of this subsection. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. However, if the initial biological monitoring results and the biological monitoring results obtained during the medical examination both show that: CdU exceeds 15 µg/g Cr; or CdB exceeds 15 µg/lwb; or B₂-M exceeds 1500 µg/g Cr, and in addition CdU exceeds 3 µg/g Cr or CdB exceeds 5 µg/liter of whole blood, then the physician shall medically remove the employee from exposure to cadmium at or above the action level. If the second set of biological monitoring results obtained during the medical examination does not show that a mandatory removal trigger level has been exceeded, then the employee is not required to be removed by the mandatory provisions of this section. If the employee is not required to be removed by the mandatory provisions of this section or by the physician's determination, then until the employee's CdU level falls to or below 3 µg/g Cr, B₂-M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall:

(A) Periodically reassess the employee's occupational exposure to cadmium;

(B) Provide biological monitoring in accordance with (b)(ii)(B) of this subsection on a quarterly basis; and

(C) Provide semiannual medical examinations in accordance with (d)(ii) of this subsection.

(iv) For all employees to whom medical surveillance is provided, beginning on January 1, 1999, and in lieu of (c)(iii) of this subsection, whenever the results of initial biological monitoring tests show the employee's CdU level to be in excess of 7 µg/g Cr, or B₂-M level to be in excess of 750 µg/g Cr, or CdB level to be in excess of 10 µg/lwb, the employer shall comply with the requirements of (c)(ii)(A) and (B) of

this subsection. Within 90 days after receipt of biological monitoring results, the employer shall provide a full medical examination to the employee in accordance with the requirements of (d)(ii) of this subsection. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. However, if the initial biological monitoring results and the biological monitoring results obtained during the medical examination both show that: CdU exceeds 7 $\mu\text{g/g}$ Cr; or CdB exceeds 10 $\mu\text{g/lwb}$; or B₂-M exceeds 750 $\mu\text{g/g}$ Cr, and in addition CdU exceeds 3 $\mu\text{g/g}$ Cr or CdB exceeds 5 $\mu\text{g/liter}$ of whole blood, then the physician shall medically remove the employee from exposure to cadmium at or above the action level. If the second set of biological monitoring results obtained during the medical examination does not show that a mandatory removal trigger level has been exceeded, then the employee is not required to be removed by the mandatory provisions of this section. If the employee is not required to be removed by the mandatory provisions of this section or by the physician's determination, then until the employee's CdU level falls to or below 3 $\mu\text{g/g}$ Cr, B₂-M level falls to or below 300 $\mu\text{g/g}$ Cr and CdB level falls to or below 5 $\mu\text{g/lwb}$, the employer shall:

(A) Periodically reassess the employee's occupational exposure to cadmium;

(B) Provide biological monitoring in accordance with (b)(ii)(B) of this subsection on a quarterly basis; and

(C) Provide semiannual medical examinations in accordance with (d)(ii) of this subsection.

(d) Periodic medical surveillance.

(i) For each employee who is covered by medical surveillance under (a)(i)(A) of this subsection because of current or anticipated exposure to cadmium, the employer shall provide at least the minimum level of periodic medical surveillance, which consists of periodic medical examinations and periodic biological monitoring. A periodic medical examination shall be provided within one year after the initial examination required by (b) of this subsection and thereafter at least biennially. Biological sampling shall be provided at least annually either as part of a periodic medical examination or separately as periodic biological monitoring.

(ii) The periodic medical examination shall include:

(A) A detailed medical and work history, or update thereof, with emphasis on: Past, present, and anticipated future exposure to cadmium; smoking history and current status; reproductive history; current use of medications with potential nephrotoxic side-effects; any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculoskeletal system dysfunction; and as part of the medical and work history, for employees who wear respirators, questions 3 through 11 and 25 through 32 in WAC 296-62-07447, Appendix D;

(B) A complete physical examination with emphasis on: Blood pressure, the respiratory system, and the urinary system;

(C) A 14 inch by 17 inch, or a reasonably standard sized posterior-anterior chest x-ray (after the initial x-ray, the frequency of chest x-rays is to be determined by the examining physician);

(D) Pulmonary function tests, including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1);

(E) Biological monitoring, as required in (b)(ii)(B) of this subsection;

(F) Blood analysis, in addition to the analysis required under (b)(ii)(B) of this subsection, including blood urea nitrogen, complete blood count, and serum creatinine;

(G) Urinalysis, in addition to the analysis required under (b)(ii)(B) of this subsection, including the determination of albumin, glucose, and total and low molecular weight proteins;

(H) For males over 40 years old, prostate palpation, or other at least as effective diagnostic test(s); and

(I) Any additional tests or procedures deemed appropriate by the examining physician.

(iii) Periodic biological monitoring shall be provided in accordance with (b)(ii)(B) of this subsection.

(iv) If the results of periodic biological monitoring or the results of biological monitoring performed as part of the periodic medical examination show the level of the employee's CdU, B₂-M, or CdB to be in excess of the levels specified in (c)(ii) and (iii) of this subsection; or, beginning on January 1, 1999, in excess of the levels specified in (c)(ii) or (iv) of this subsection, the employer shall take the appropriate actions specified in (c)(ii) through (iv) of this subsection, respectively.

(v) For previously exposed employees under (a)(i)(B) of this subsection:

(A) If the employee's levels of CdU did not exceed 3 $\mu\text{g/g}$ Cr, CdB did not exceed 5 $\mu\text{g/lwb}$, and B₂-M did not exceed 300 $\mu\text{g/g}$ Cr in the initial biological monitoring tests, and if the results of the follow-up biological monitoring required by (c)(i)(B) of this subsection one year after the initial examination confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.

(B) If the initial biological monitoring results for CdU, CdB, or B₂-M were in excess of the levels specified in (c)(i) of this subsection, but subsequent biological monitoring results required by (c)(ii) through (iv) of this subsection show that the employee's CdU levels no longer exceed 3 $\mu\text{g/g}$ Cr, CdB levels no longer exceed 5 $\mu\text{g/lwb}$, and B₂-M levels no longer exceed 300 $\mu\text{g/g}$ Cr, the employer shall provide biological monitoring for CdU, CdB, and B₂-M one year after these most recent biological monitoring results. If the results of the follow-up biological monitoring specified in this section, confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.

(C) However, if the results of the follow-up tests specified in (d)(v)(A) or (B) of this subsection indicate that the level of the employee's CdU, B₂-M, or CdB exceeds these same levels, the employer is required to provide annual medical examinations in accordance with the provisions of (d)(ii) of this subsection until the results of biological monitoring are consistently below these levels or the examining physician determines in a written medical opinion that further medical surveillance is not required to protect the employee's health.

(vi) A routine, biennial medical examination is not required to be provided in accordance with (c)(i) and (d) of this subsection if adequate medical records show that the employee has been examined in accordance with the requirements of (d)(ii) of this subsection within the past 12 months. In that case, such records shall be maintained by the employer as part of the employee's medical record, and the next routine, periodic medical examination shall be made available to the employee within two years of the previous examination.

(e) Actions triggered by medical examinations. If the results of a medical examination carried out in accordance with this section indicate any laboratory or clinical finding consistent with cadmium toxicity that does not require employer action under (b), (c), or (d) of this subsection, the employer shall take the following steps and continue to take them until the physician determines that they are no longer necessary.

(i) Periodically reassess: The employee's work practices and personal hygiene; the employee's respirator use, if any; the employee's smoking history and status; the respiratory protection program; the hygiene facilities; the maintenance and effectiveness of the relevant engineering controls; and take all reasonable steps to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium.

(ii) Provide semiannual medical reexaminations to evaluate the abnormal clinical sign(s) of cadmium toxicity until the results are normal or the employee is medically removed; and

(iii) Where the results of tests for total proteins in urine are abnormal, provide a more detailed medical evaluation of the toxic effects of cadmium on the employee's renal system.

(f) Examination for respirator use.

(i) To determine an employee's fitness for respirator use, the employer shall provide a medical examination that includes the elements specified in (f)(i)(A) through (D) of this subsection. This examination shall be provided prior to the employee's being assigned to a job that requires the use of a respirator or no later than 90 days after this section goes into effect, whichever date is later, to any employee without a medical examination within the preceding 12 months that satisfies the requirements of this section.

(A) A detailed medical and work history, or update thereof, with emphasis on: Past exposure to cadmium; smoking history and current status; any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculo-skeletal system dysfunction; a description of the job for which the respirator is required; and questions 3 through 11 and 25 through 32 in WAC 296-62-07447, Appendix D;

(B) A blood pressure test;

(C) Biological monitoring of the employee's levels of CdU, CdB and B₂-M in accordance with the requirements of (b)(ii)(B) of this subsection, unless such results already have been obtained within the twelve months; and

(D) Any other test or procedure that the examining physician deems appropriate.

(ii) After reviewing all the information obtained from the medical examination required in (f)(i) of this subsection, the

physician shall determine whether the employee is fit to wear a respirator.

(iii) Whenever an employee has exhibited difficulty in breathing during a respirator fit test or during use of a respirator, the employer, as soon as possible, shall provide the employee with a periodic medical examination in accordance with (d)(ii) of this subsection to determine the employee's fitness to wear a respirator.

(iv) Where the results of the examination required under (f)(i), (ii), or (iii) of this subsection are abnormal, medical limitation or prohibition of respirator use shall be considered. If the employee is allowed to wear a respirator, the employee's ability to continue to do so shall be periodically evaluated by a physician.

(g) Emergency examinations.

(i) In addition to the medical surveillance required in (b) through (f) of this subsection, the employer shall provide a medical examination as soon as possible to any employee who may have been acutely exposed to cadmium because of an emergency.

(ii) The examination shall include the requirements of (d)(ii), of this subsection, with emphasis on the respiratory system, other organ systems considered appropriate by the examining physician, and symptoms of acute overexposure, as identified in Appendix A, WAC 296-62-07441 (2)(b)(i) and (ii) and (4).

(h) Termination of employment examination.

(i) At termination of employment, the employer shall provide a medical examination in accordance with (d)(ii) of this subsection, including a chest x-ray where necessary, to any employee to whom at any prior time the employer was required to provide medical surveillance under (a)(i) or (g) of this subsection. However, if the last examination satisfied the requirements of (d)(ii) of this subsection and was less than six months prior to the date of termination, no further examination is required unless otherwise specified in (c) or (e) of this subsection;

(ii) In addition, if the employer has discontinued all periodic medical surveillance under (d)(v) of this subsection, no termination of employment medical examination is required.

(i) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this standard and appendices;

(ii) A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to cadmium;

(iii) The employee's former, current, and anticipated future levels of occupational exposure to cadmium;

(iv) A description of any personal protective equipment, including respirators, used or to be used by the employee, including when and for how long the employee has used that equipment; and

(v) Relevant results of previous biological monitoring and medical examinations.

(j) Physician's written medical opinion.

(i) The employer shall promptly obtain a written, signed, medical opinion from the examining physician for each medical examination performed on each employee. This written opinion shall contain:

(A) The physician's diagnosis for the employee;

(B) The physician's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to cadmium, including any indications of potential cadmium toxicity;

(C) The results of any biological or other testing or related evaluations that directly assess the employee's absorption of cadmium;

(D) Any recommended removal from, or limitation on the activities or duties of the employee or on the employee's use of personal protective equipment, such as respirators;

(E) A statement that the physician has clearly and carefully explained to the employee the results of the medical examination, including all biological monitoring results and any medical conditions related to cadmium exposure that require further evaluation or treatment, and any limitation on the employee's diet or use of medications.

(ii) The employer shall promptly obtain a copy of the results of any biological monitoring provided by an employer to an employee independently of a medical examination under (b) and (d) of this subsection, and, in lieu of a written medical opinion, an explanation sheet explaining those results.

(iii) The employer shall instruct the physician not to reveal orally or in the written medical opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to cadmium.

(k) Medical removal protection (MRP).

(i) General.

(A) The employer shall temporarily remove an employee from work where there is excess exposure to cadmium on each occasion that medical removal is required under (c), (d), or (f) of this subsection and on each occasion that a physician determines in a written medical opinion that the employee should be removed from such exposure. The physician's determination may be based on biological monitoring results, inability to wear a respirator, evidence of illness, other signs or symptoms of cadmium-related dysfunction or disease, or any other reason deemed medically sufficient by the physician.

(B) The employer shall medically remove an employee in accordance with (k) of this subsection regardless of whether at the time of removal a job is available into which the removed employee may be transferred.

(C) Whenever an employee is medically removed under (k) of this subsection, the employer shall transfer the removed employee to a job where the exposure to cadmium is within the permissible levels specified in subsection (12) of this section as soon as one becomes available.

(D) For any employee who is medically removed under the provisions of (k)(i) of this subsection, the employer shall provide follow-up medical examinations semiannually until, in a written medical opinion, the examining physician determines that either the employee may be returned to his/her former job status or the employee must be permanently removed from excess cadmium exposure.

(E) The employer may not return an employee who has been medically removed for any reason to his/her former job status until a physician determines in a written medical opin-

ion that continued medical removal is no longer necessary to protect the employee's health.

(ii) Where an employee is found unfit to wear a respirator under (f)(ii) of this subsection, the employer shall remove the employee from work where exposure to cadmium is above the PEL.

(iii) Where removal is based upon any reason other than the employee's inability to wear a respirator, the employer shall remove the employee from work where exposure to cadmium is at or above the action level.

(iv) Except as specified in (k)(v) of this subsection, no employee who was removed because his/her level of CdU, CdB and/or B₂-M exceeded the trigger levels in (c) or (d) of this subsection may be returned to work with exposure to cadmium at or above the action level until the employee's levels of CdU fall to or below 3 µg/g Cr, CdB fall to or below 5 µg/lwb, and B₂-M fall to or below 300 µg/g Cr.

(v) However, when in the examining physician's opinion continued exposure to cadmium will not pose an increased risk to the employee's health and there are special circumstances that make continued medical removal an inappropriate remedy, the physician shall fully discuss these matters with the employee, and then in a written determination may return a worker to his/her former job status despite what would otherwise be unacceptably high biological monitoring results. Thereafter and until such time as the employee's biological monitoring results have decreased to levels where he/she could have been returned to his/her former job status, the returned employee shall continue medical surveillance as if he/she were still on medical removal. Until such time, the employee is no longer subject to mandatory medical removal. Subsequent questions regarding the employee's medical removal shall be decided solely by a final medical determination.

(vi) Where an employer, although not required by this section to do so, removes an employee from exposure to cadmium or otherwise places limitations on an employee due to the effects of cadmium exposure on the employee's medical condition, the employer shall provide the same medical removal protection benefits to that employee under (l) of this subsection as would have been provided had the removal been required under (k) of this subsection.

(l) Medical removal protection benefits.

(i) The employer shall provide medical removal protection benefits to an employee for up to a maximum of 18 months each time, and while the employee is temporarily medically removed under (k) of this subsection.

(ii) For purposes of this section, the requirement that the employer provide medical removal protection benefits means that the employer shall maintain the total normal earnings, seniority, and all other employee rights and benefits of the removed employee, including the employee's right to his/her former job status, as if the employee had not been removed from the employee's job or otherwise medically limited.

(iii) Where, after 18 months on medical removal because of elevated biological monitoring results, the employee's monitoring results have not declined to a low enough level to permit the employee to be returned to his/her former job status:

(A) The employer shall make available to the employee a medical examination pursuant to this section in order to obtain a final medical determination as to whether the employee may be returned to his/her former job status or must be permanently removed from excess cadmium exposure; and

(B) The employer shall assure that the final medical determination indicates whether the employee may be returned to his/her former job status and what steps, if any, should be taken to protect the employee's health.

(iv) The employer may condition the provision of medical removal protection benefits upon the employee's participation in medical surveillance provided in accordance with this section.

(m) Multiple physician review.

(i) If the employer selects the initial physician to conduct any medical examination or consultation provided to an employee under this section, the employee may designate a second physician to:

(A) Review any findings, determinations, or recommendations of the initial physician; and

(B) Conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

(ii) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple physician review upon the employee doing the following within fifteen (15) days after receipt of this notice, or receipt of the initial physician's written opinion, whichever is later:

(A) Informing the employer that he or she intends to seek a medical opinion; and

(B) Initiating steps to make an appointment with a second physician.

(iii) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

(iv) If the two physicians have been unable to quickly resolve their disagreement, then the employer and the employee, through their respective physicians, shall designate a third physician to:

(A) Review any findings, determinations, or recommendations of the other two physicians; and

(B) Conduct such examinations, consultations, laboratory tests, and discussions with the other two physicians as the third physician deems necessary to resolve the disagreement among them.

(v) The employer shall act consistently with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement that is consistent with the recommendations of at least one of the other two physicians.

(n) Alternate physician determination. The employer and an employee or designated employee representative may agree upon the use of any alternate form of physician deter-

mination in lieu of the multiple physician review provided by (m) of this subsection, so long as the alternative is expeditious and at least as protective of the employee.

(o) Information the employer must provide the employee.

(i) The employer shall provide a copy of the physician's written medical opinion to the examined employee within five working days after receipt thereof.

(ii) The employer shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results within five working days after receipt thereof.

(iii) Within 30 days after a request by an employee, the employer shall provide the employee with the information the employer is required to provide the examining physician under (i) of this subsection.

(p) Reporting. In addition to other medical events that are required to be reported on the OSHA Form No. 200, the employer shall report any abnormal condition or disorder caused by occupational exposure to cadmium associated with employment as specified in Chapter (V)(E) of the Bureau of Labor Statistics Recordkeeping Guidelines for Occupational Injuries and Illnesses.

(13) Communication of cadmium hazards to employees

(a) General. In communications concerning cadmium hazards, employers shall comply with the requirements of WISHA's Hazard Communication Standard, chapter 296-62 WAC, Part C, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training. In addition, employers shall comply with the following requirements:

(b) Warning signs.

(i) Warning signs shall be provided and displayed in regulated areas. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

(ii) Warning signs required by (b)(i) of this subsection shall bear the following information:

Danger, Cadmium, Cancer Hazard, Can Cause Lung and
Kidney Disease, Authorized Personnel Only, Respirators
Required in This Area

(iii) The employer shall assure that signs required by this section are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.

(c) Warning labels.

(i) Shipping and storage containers containing cadmium, cadmium compounds, or cadmium contaminated clothing, equipment, waste, scrap, or debris shall bear appropriate warning labels, as specified in (c)(ii) of this subsection.

(ii) The warning labels shall include at least the following information:

Danger, Contains Cadmium, Cancer Hazard, Avoid Creating Dust, Can Cause Lung and Kidney Disease

(iii) Where feasible, installed cadmium products shall have a visible label or other indication that cadmium is present.

(d) Employee information and training.

(i) The employer shall institute a training program for all employees who are potentially exposed to cadmium, assure employee participation in the program, and maintain a record of the contents of such program.

(ii) Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

(iii) The employer shall make the training program understandable to the employee and shall assure that each employee is informed of the following:

(A) The health hazards associated with cadmium exposure, with special attention to the information incorporated in WAC 296-62-07441, Appendix A;

(B) The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the PEL;

(C) The engineering controls and work practices associated with the employee's job assignment;

(D) The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect employees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;

(E) The purpose, proper selection, fitting, proper use, and limitations of respirators and protective clothing;

(F) The purpose and a description of the medical surveillance program required by subsection (12) of this section;

(G) The contents of this section and its appendices; and

(H) The employee's rights of access to records under chapter 296-62 WAC, Part B.

(iv) Additional access to information and training program and materials.

(A) The employer shall make a copy of this section and its appendices readily available to all affected employees and shall provide a copy without cost if requested.

(B) Upon request, the employer shall provide to the director or authorized representative, all materials relating to the employee information and the training program.

(e) Multi-employer workplace. In a multi-employer workplace, an employer who produces, uses, or stores cadmium in a manner that may expose employees of other employers to cadmium shall notify those employers of the potential hazard in accordance with WAC 296-62-05409 of the hazard communication standard.

(14) Recordkeeping.

(a) Exposure monitoring.

(i) The employer shall establish and keep an accurate record of all air monitoring for cadmium in the workplace.

(ii) This record shall include at least the following information:

(A) The monitoring date, shift, duration, air volume, and results in terms of an 8-hour TWA of each sample taken, and if cadmium is not detected, the detection level;

(B) The name, Social Security number, and job classification of all employees monitored and of all other employees whose exposures the monitoring result is intended to represent, including, where applicable, a description of how it was determined that the employee's monitoring result could be taken to represent other employee's exposures;

(C) A description of the sampling and analytical methods used and evidence of their accuracy;

(D) The type of respiratory protective device, if any, worn by the monitored employee and by any other employee whose exposure the monitoring result is intended to represent;

(E) A notation of any other conditions that might have affected the monitoring results;

(F) Any exposure monitoring or objective data that were used and the levels.

(iii) The employer shall maintain this record for at least thirty (30) years, in accordance with WAC 296-62-05207.

(iv) The employer shall also provide a copy of the results of an employee's air monitoring prescribed in subsection (4) of this section to an industry trade association and to the employee's union, if any, or, if either of such associations or unions do not exist, to another comparable organization that is competent to maintain such records and is reasonably accessible to employers and employees in the industry.

(b) Objective data for exemption from requirement for initial monitoring.

(i) For purposes of this section, objective data are information demonstrating that a particular product or material containing cadmium or a specific process, operation, or activity involving cadmium cannot release dust or fumes in concentrations at or above the action level even under the worst-case release conditions. Objective data can be obtained from an industry-wide study or from laboratory product test results from manufacturers of cadmium-containing products or materials. The data the employer uses from an industry-wide survey must be obtained under workplace conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

(ii) The employer shall maintain the record for at least 30 years of the objective data relied upon.

(c) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee covered by medical surveillance under (a)(i) of this subsection.

(ii) The record shall include at least the following information about the employee:

(A) Name, Social Security number, and description of duties;

(B) A copy of the physician's written opinions and of the explanation sheets for biological monitoring results;

(C) A copy of the medical history, and the results of any physical examination and all test results that are required to be provided by this section, including biological tests, x-rays, pulmonary function tests, etc., or that have been obtained to

further evaluate any condition that might be related to cadmium exposure;

(D) The employee's medical symptoms that might be related to exposure to cadmium; and

(E) A copy of the information provided to the physician as required by subsection (12)(i) of this section.

(iii) The employer shall assure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with WAC 296-62-05207.

(iv) At the employee's request, the employer shall promptly provide a copy of the employee's medical record, or update as appropriate, to a medical doctor or a union specified by the employee.

(d) Training. The employer shall certify that employees have been trained by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed. The certification records shall be prepared at the completion of training and shall be maintained on file for one (1) year beyond the date of training of that employee.

(e) Availability.

(i) Except as otherwise provided for in this section, access to all records required to be maintained by (a) through (d) of this subsection shall be in accordance with the provisions of WAC 296-62-052.

(ii) Within 15 days after a request, the employer shall make an employee's medical records required to be kept by (c) of this subsection available for examination and copying to the subject employee, to designated representatives, to anyone having the specific written consent of the subject employee, and after the employee's death or incapacitation, to the employee's family members.

(f) Transfer of records. Whenever an employer ceases to do business and there is no successor employer or designated organization to receive and retain records for the prescribed period, the employer shall comply with the requirements concerning transfer of records set forth in WAC 296-62-05215.

(15) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to cadmium.

(b) Observation procedures. When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with that clothing and equipment and shall assure that the observer uses such clothing and equipment and complies with all other applicable safety and health procedures.

(16) Appendices.

(a) Compliance with the fit testing requirements in WAC 296-62-07201 through 296-62-07248, Appendices A-1, A-2 and A-3 of chapter 296-62 WAC, Part E, are mandatory.

(b) Except where portions of WAC 296-62-07441, 296-62-07443, 296-62-07447, 296-62-07449, and 296-62-07451, Appendices A, B, D, E, and F, respectively, to this section are expressly incorporated in requirements of this section, these appendices are purely informational and are not intended to

create any additional obligations not otherwise imposed or to detract from any existing obligations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-174, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-155-174, filed 7/20/94, effective 9/20/94; 93-21-075 (Order 93-06), § 296-155-174, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-155-174, filed 3/13/93, effective 4/27/93.]

WAC 296-155-17613 Respiratory protection. (1) General. For employees who use respirators required by WAC 296-155-176, the employer must provide respirators that comply with the requirements of this section. Respirators must be used during:

(a) Periods when an employee's exposure to lead exceeds the PEL.

(b) Work operations for which engineering controls and work-practices are not sufficient to reduce employee exposures to or below the PEL.

(c) Periods when an employee requests a respirator.

(d) Periods when respirators are required to provide interim protection of employees while they perform the operations as specified in WAC 296-155-17609(2).

(2) Respirator program.

(a) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through WAC 296-62-07156).

(b) If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination as required by WAC 296-155-17621 (3)(a)(ii) to determine whether or not the employee can use a respirator while performing the required duty.

(3) Respirator selection.

(a) The employer must select the appropriate respirator or combination of respirators from Table I of this section.

(b) The employer must provide a powered air-purifying respirator when an employee chooses to use such a respirator and it will provide adequate protection to the employee.

Table I.— Respiratory Protection for Lead Aerosols

Airborne concentration of lead or condition of use	Required respirator ^a
Not in excess of 500 µg/m ³	1/2 mask air purifying respirator with high efficiency filters. ^{b, c} 1/2 mask supplied air respirator operated in demand (negative pressure) mode.
Not in excess of 1,250 µg/m ³	Loose fitting hood or helmet powered air purifying respirator with high efficiency filters. ^c Hood or helmet supplied air respirator operated in a continuous-flow mode— e.g., type CE abrasive blasting respirators operated in a continuous-flow mode.
Not in excess of 2,500 µg/m ³	Full facepiece air purifying respirator with high efficiency filters. ^c Tight fitting powered air purifying respirator with high efficiency filters. ^c Full facepiece supplied air respirator operated in demand mode. 1/2 mask or full facepiece supplied air respirator operated in a continuous-flow mode.

Airborne concentration of lead or condition of use	Required respirator ^a Full facepiece self-contained breathing apparatus (SCBA) operated in demand mode.
Not in excess of 50,000 µg/m ³	1/2 mask supplied air respirator operated in pressure demand or other positive-pressure mode.
Not in excess of 100,000 µg/m	Full facepiece supplied air respirator operated in pressure demand or other positive-pressure mode—e.g., type CE abrasive blasting respirators operated in a positive-pressure mode.
Greater than 100,000 µg/m ³ unknown concentration, or fire fighting	Full facepiece SCBA operated in pressure demand or other positive pressure mode.

- ^a Respirators specified for higher concentrations can be used at lower concentrations of lead.
- ^b Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.
- ^c A high efficiency particulate filter (HEPA) means a filter that is 99.97 percent efficient against particles of 0.3 micron size or larger.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-17613, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17613, filed 10/29/93, effective 12/10/93.]

WAC 296-155-17625 Employee information and training. (1) General.

(a) The employer shall communicate information concerning lead hazards according to the requirements of WISHA's Hazard Communication Standard for the construction industry, part C of chapter 296-62 WAC, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training. In addition, employers shall comply with the following requirements:

(b) For all employees who are subject to exposure to lead at or above the action level on any day or who are subject to exposure to lead compounds which may cause skin or eye irritation (e.g., lead arsenate, lead azide), the employer shall provide a training program in accordance with subsection (2) of this section and assure employee participation.

(c) The employer shall provide the training program as initial training prior to the time of job assignment or prior to the start up date for this requirement, whichever comes last.

(d) The employer shall also provide the training program at least annually for each employee who is subject to lead exposure at or above the action level on any day.

(2) Training program. The employer shall assure that each employee is trained in the following:

- (a) The content of this standard and its appendices;
- (b) The specific nature of the operations which could result in exposure to lead above the action level;
- (c) The training requirements for respiratory protection as required by chapter 296-62 WAC, Part E (see WAC 296-62-07117, 296-62-07172, and WAC 296-62-07186 through 296-62-07190);
- (d) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular

attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant);

(e) The engineering controls and work practices associated with the employee's job assignment including training of employees to follow relevant good work practices described in Appendix B, WAC 296-155-17652;

(f) The contents of any compliance plan in effect;

(g) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician; and

(h) The employee's right of access to records under Part B, chapter 296-62 WAC.

(3) Access to information and training materials.

(a) The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(b) The employer shall provide, upon request, all materials relating to the employee information and training program to affected employees and their designated representatives, and the director.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-17625, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17625, filed 10/29/93, effective 12/10/93.]

WAC 296-155-17635 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-17652 Appendix B to WAC 296-155-176—Employee standard summary. This appendix summarizes key provisions of the standard for lead in construction that you as a worker should become familiar with.

(1) Permissible exposure limit (PEL)—WAC 296-62-17607.

The standard sets a permissible exposure limit (PEL) of 50 micrograms of lead per cubic meter of air (50 µg/m³), averaged over an 8-hour workday which is referred to as a time-weighted average (TWA). This is the highest level of lead in air to which you may be permissibly exposed over an 8-hour workday. However, since this is an 8-hour average, short exposures above the PEL are permitted so long as for each 8-hour work day your average exposure does not exceed this level. This standard, however, takes into account the fact that your daily exposure to lead can extend beyond a typical 8-hour workday as the result of overtime or other alterations in your work schedule. To deal with this situation, the standard contains a formula which reduces your permissible exposure when you are exposed more than 8 hours. For example, if you are exposed to lead for 10 hours a day, the maximum permitted average exposure would be 40 µg/m³.

(2) Exposure assessment—WAC 296-155-17609.

If lead is present in your workplace in any quantity, your employer is required to make an initial determination of whether any employee's exposure to lead exceeds the action level (30 µg/m³ averaged over an 8-hour day). Employee exposure is that exposure which would occur if the employee were not using a respirator. This initial determination requires your employer to monitor workers' exposures unless

the employee has objective data which can demonstrate conclusively that no employee will be exposed to lead in excess of the action level. Where objective data is used in lieu of actual monitoring the employer must establish and maintain an accurate record, documenting its relevancy in assessing exposure levels for current job conditions. If such objective data is available, the employer need proceed no further on employee exposure assessment until such time that conditions have changed and the determination is no longer valid.

Objective data may be compiled from various sources, e.g., insurance companies and trade associations and information from suppliers or exposure data collected from similar operations. Objective data may also comprise previously-collected sampling data including area monitoring. If it cannot be determined through using objective data that worker exposure is less than the action level, your employer must conduct monitoring or must rely on relevant previous personal sampling, if available. Where monitoring is required for the initial determination, it may be limited to a representative number of employees who are reasonably expected to have the highest exposure levels. If your employer has conducted appropriate air sampling for lead in the past 12 months, they may use these results, provided they are applicable to the same employee tasks and exposure conditions and meet the requirements for accuracy as specified in the standard. As with objective data, if such results are relied upon for the initial determination, your employer must establish and maintain a record as to the relevancy of such data to current job conditions.

If there have been any employee complaints of symptoms which may be attributable to exposure to lead or if there is any other information or observations which would indicate employee exposure to lead, this must also be considered as part of the initial determination. If this initial determination shows that a reasonable possibility exists that any employee may be exposed, without regard to respirator, over the action level, your employer must set up an air monitoring program to determine the exposure level representative of each employee exposed to lead at your workplace. In carrying out this air monitoring program, your employer is not required to monitor the exposure of every employee, but they must monitor a representative number of employees and job types. Enough sampling must be done to enable each employee's exposure level to be reasonably represent full shift exposure. In addition, these air samples must be taken under conditions which represent each employee's regular, daily exposure to lead. Sampling performed in the past 12 months may be used to determine exposures above the action level if such sampling was conducted during work activities essentially similar to present work conditions.

The standard lists certain tasks which may likely result in exposures to lead in excess of the PEL and, in some cases, exposures in excess of 50 times the PEL. If you are performing any of these tasks, your employer must provide you with appropriate respiratory protection, protective clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until such time that an exposure assessment is conducted which demonstrates that your exposure level is below the PEL.

If you are exposed to lead and air sampling is performed, your employer is required to notify you in writing within 5 working days of the air monitoring results which represent your exposure. If the results indicate that your exposure exceeds the PEL (without regard to your use of a respirator), then your employer must also notify you of this in writing, and provide you with a description of the corrective action that has been taken or will be taken to reduce your exposure.

Your exposure must be rechecked by monitoring, at least every six months if your exposure is at or over the action level but below the PEL. Your employer may discontinue monitoring for you if 2 consecutive measurements, taken at least 7 days apart, are at or below the action level. Air monitoring must be repeated every 3 months if you are exposed over the PEL. Your employer must continue monitoring for you at this frequency until 2 consecutive measurements, taken at least 7 days apart, are below the PEL but above the action level, at which time your employer must repeat monitoring of your exposure every six months and may discontinue monitoring only after your exposure drops to or below the action level. However, whenever there is a change of equipment, process, control, or personnel or a new type of job is added at your workplace which may result in new or additional exposure to lead, your employer must perform additional monitoring.

(3) Methods of compliance—WAC 296-155-17611.

Your employer is required to assure that no employee is exposed to lead in excess of the PEL as an 8-hour TWA. The standard for lead in construction requires employers to institute engineering and work practice controls including administrative controls to the extent feasible to reduce employee exposure to lead. Where such controls are feasible but not adequate to reduce exposures below the PEL they must be used nonetheless to reduce exposures to the lowest level that can be accomplished by these means and then supplemented with appropriate respiratory protection.

Your employer is required to develop and implement a written compliance program prior to the commencement of any job where employee exposures may reach the PEL as an 8-hour TWA. The standard identifies the various elements that must be included in the plan. For example, employers are required to include a description of operations in which lead is emitted, detailing other relevant information about the operation such as the type of equipment used, the type of material involved, employee job responsibilities, operating procedures and maintenance practices. In addition, your employer's compliance plan must specify the means that will be used to achieve compliance and, where engineering controls are required, include any engineering plans or studies that have been used to select the control methods. If administrative controls involving job rotation are used to reduce employee exposure to lead, the job rotation schedule must be included in the compliance plan. The plan must also detail the type of protective clothing and equipment, including respirator, housekeeping and hygiene practices that will be used to protect you from the adverse effects of exposure to lead.

The written compliance program must be made available, upon request, to affected employees and their designated representatives, and the director.

Finally, the plan must be reviewed and updated at least every 6 months to assure it reflects the current status in exposure control.

(4) Respiratory protection—WAC 296-155-17613.

Your employer is required to select respirator from the types listed in Table I of the Respiratory Protection section of the standard (see WAC 296-155-17613). Any respirator chosen must be certified by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84. This respirator selection table will enable your employer to choose a type of respirator that will give you a proper amount of protection based on your airborne lead exposure. Your employer may select a type of respirator that provides greater protection than that required by the standard; that is, one recommended for a higher concentration of lead than is present in your workplace. For example, a powered air-purifying respirator (PAPR) is much more protective than a typical negative pressure respirator, and may also be more comfortable to wear. A PAPR has a filter, cartridge, or canister to clean the air, and a power source which continuously blows filtered air into your breathing zone. Your employer might make a PAPR available to you to ease the burden of having to wear a respirator for long periods of time. The standard provides that you can obtain a PAPR upon request.

Your employer must also start a Respiratory Protection Program. This program must include written procedures for the proper selection, use, cleaning, storage, and maintenance of respirator.

Your employer must ensure that your respirator facepiece fits properly. Proper fit of a respirator facepiece is critical to your protection from airborne lead. Obtaining a proper fit on each employee may require your employer to make available several different types of respirator masks. To ensure that your respirator fits properly and that facepiece leakage is minimal, your employer must give you either a qualitative or quantitative fit test as specified in WAC 296-62-07201 through 296-62-07248, Appendices A-1, A-2 and A-3 of chapter 296-62 WAC, Part E.

(5) Protective work clothing and equipment—WAC 296-155-17615.

If you are exposed to lead above the PEL as an 8-hour TWA, without regard to your use of a respirator, or if you are exposed to lead compounds such as lead arsenate or lead azide which can cause skin and eye irritation, your employer must provide you with protective work clothing and equipment appropriate for the hazard. If work clothing is provided, it must be provided in a clean and dry condition at least weekly, and daily if your airborne exposure to lead is greater than 200 $\mu\text{g}/\text{m}^3$. Appropriate protective work clothing and equipment can include coveralls or similar full-body work clothing, gloves, hats, shoes or disposable shoe coverlets, and face shields or vented goggles. Your employer is required to provide all such equipment at no cost to you. In addition, your employer is responsible for providing repairs and replacement as necessary, and also is responsible for the cleaning, laundering or disposal of protective clothing and equipment.

The standard requires that your employer assure that you follow good work practices when you are working in areas where your exposure to lead may exceed the PEL. With

respect to protective clothing and equipment, where appropriate, the following procedures should be observed prior to beginning work:

- ◆ Change into work clothing and shoe covers in the clean section of the designated changing areas;
- ◆ Use work garments of appropriate protective gear, including respirator before entering the work area; and
- ◆ Store any clothing not worn under protective clothing in the designated changing area.

Workers should follow these procedures upon leaving the work area:

- ◆ HEPA vacuum heavily contaminated protective work clothing while it is still being worn. At no time may lead be removed from protective clothing by any means which result in uncontrolled dispersal of lead into the air;
- ◆ Remove shoe covers and leave them in the work area;
- ◆ Remove protective clothing and gear in the dirty area of the designated changing area. Remove protective coveralls by carefully rolling down the garment to reduce exposure to dust.
- ◆ Remove respirator last; and
- ◆ Wash hands and face.

Workers should follow these procedures upon finishing work for the day (in addition to procedures described above):

- ◆ Where applicable, place disposal coveralls and shoe covers with the abatement waste;
- ◆ Contaminated clothing which is to be cleaned, laundered or disposed of must be placed in closed containers in the change room.
- ◆ Clean protective gear, including respirator, according to standard procedures;
- ◆ Wash hands and face again.

If showers are available, take a shower and wash hair. If shower facilities are not available at the work site, shower immediately at home and wash hair.

(6) Housekeeping—WAC 296-155-17617.

Your employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. Vacuuming is the preferred method of meeting this requirement, and the use of compressed air to clean floors and other surfaces is generally prohibited unless removal with compressed air is done in conjunction with ventilation systems designed to contain dispersal of the lead dust. Dry or wet sweeping, shoveling, or brushing may not be used except where vacuuming or other equally effective methods have been tried and do not work. Vacuums must be used equipped with a special filter called a high-efficiency particulate air (HEPA) filter and emptied in a manner which minimizes the reentry of lead into the workplace.

(7) Hygiene facilities and practices—WAC 296-155-17619.

The standard requires that hand washing facilities be provided where occupational exposure to lead occurs. In addition, change areas, showers (where feasible), and lunchrooms or eating areas are to be made available to workers exposed to lead above the PEL. Your employer must assure that except in these facilities, food and beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, where airborne expo-

tures are above the PEL. Change rooms provided by your employer must be equipped with separate storage facilities for your protective clothing and equipment and street clothes to avoid cross-contamination. After showering, no required protective clothing or equipment worn during the shift may be worn home. It is important that contaminated clothing or equipment be removed in change areas and not be worn home or you will extend your exposure and expose your family since lead from your clothing can accumulate in your house, car, etc.

Lunchrooms or eating areas may not be entered with protective clothing or equipment unless surface dust has been removed by vacuuming, downdraft booth, or other cleaning method. Finally, workers exposed above the PEL must wash both their hands and faces prior to eating, drinking, smoking or applying cosmetics.

All of the facilities and hygiene practices just discussed are essential to minimize additional sources of lead absorption from inhalation or ingestion of lead that may accumulate on you, your clothes, or your possessions. Strict compliance with these provisions can virtually eliminate several sources of lead exposure which significantly contribute to excessive lead absorption.

(8) Medical surveillance—WAC 296-155-17621.

The medical surveillance program is part of the standard's comprehensive approach to the prevention of lead-related disease. Its purpose is to supplement the main thrust of the standard which is aimed at minimizing airborne concentrations of lead and sources of ingestion. Only medical surveillance can determine if the other provisions of the standard have affectively protected you as an individual. Compliance with the standard's provision will protect most workers from the adverse effects of lead exposure, but may not be satisfactory to protect individual workers:

- ◆ Who have high body burdens of lead acquired over past years,
- ◆ Who have additional uncontrolled sources of nonoccupational lead exposure,
- ◆ Who exhibit unusual variations in lead absorption rates, or
- ◆ Who have specific nonwork related medical conditions which could be aggravated by lead exposure (e.g., renal disease, anemia).

In addition, control systems may fail, or hygiene and respirator programs may be inadequate. Periodic medical surveillance of individual workers will help detect those failures. Medical surveillance will also be important to protect your reproductive ability—regardless of whether you are a man or woman.

All medical surveillance required by the standard must be performed by or under the supervision of a licensed physician. The employer must provide required medical surveillance without cost to employees and at a reasonable time and place. The standard's medical surveillance program has two parts—periodic biological monitoring and medical examinations. Your employer's obligation to offer you medical surveillance is triggered by the results of the air monitoring program. Full medical surveillance must be made available to all employees who are or may be exposed to lead in excess of the action level for more than 30 days a year and whose blood lead level exceeds 40 µg/dl. Initial medical surveillance con-

sisting of blood sampling and analysis for lead and zinc protoporphyrin must be provided to all employees exposed at any time (1 day) above the action level.

Biological monitoring under the standard must be provided at least every 2 months for the first 6 months and every 6 months thereafter until your blood lead level is below 40 µg/dl. A zinc protoporphyrin (ZPP) test is a very useful blood test which measures an adverse metabolic effect of lead on your body and is therefore an indicator of lead toxicity.

If your BLL exceeds 40 µg/dl the monitoring frequency must be increased from every 6 months to at least every 2 months and not reduced until two consecutive BLLs indicate a blood lead level below 40 µg/dl. Each time your BLL is determined to be over 40 µg/dl, your employer must notify you of this in writing within five working days of their receipt of the test results. The employer must also inform you that the standard requires temporary medical removal with economic protection when your BLL exceeds 50 µg/dl. (See Discussion of medical removal protection—WAC 296-155-17623.) Anytime your BLL exceeds 50 µg/dl your employer must make available to you within two weeks of receipt of these test results a second follow-up BLL test to confirm your BLL. If the two tests both exceed 50 µg/dl, and you are temporarily removed, then your employer must make successive BLL tests available to you on a monthly basis during the period of your removal.

Medical examinations beyond the initial one must be made available on an annual basis if your blood lead level exceeds 40 µg/dl at any time during the preceding year and you are being exposed above the airborne action level of 30 µg/m³ for 30 or more days per year. The initial examination will provide information to establish a baseline to which subsequent data can be compared.

An initial medical examination to consist of blood sampling and analysis for lead and zinc protoporphyrin must also be made available (prior to assignment) for each employee being assigned for the first time to an area where the airborne concentration of lead equals or exceeds the action level at any time. In addition, a medical examination or consultation must be made available as soon as possible if you notify your employer that you are experiencing signs or symptoms commonly associated with lead poisoning or that you have difficulty breathing while wearing a respirator or during a respirator fit test. You must also be provided a medical examination or consultation if you notify your employer that you desire medical advice concerning the effects of current or past exposure to lead on your ability to procreate a healthy child.

Finally, appropriate follow-up medical examinations or consultations may also be provided for employees who have been temporarily removed from exposure under the medical removal protection provisions of the standard. (See subsection (9), below.)

The standard specifies the minimum content of pre-assignment and annual medical examinations. The content of other types of medical examinations and consultations is left up to the sound discretion of the examining physician. Pre-assignment and annual medical examinations must include:

- ◆ A detailed work history and medical history;

- ◆ A thorough physical examination, including an evaluation of your pulmonary status if you will be required to use a respirator;
- ◆ A blood pressure measurement; and
- ◆ A series of laboratory tests designed to check your blood chemistry and your kidney function.

In addition, at any time upon your request, a laboratory evaluation of male fertility will be made (microscopic examination of a sperm sample), or a pregnancy test will be given.

The standard does not require that you participate in any of the medical procedures, tests, etc. which your employer is required to make available to you. Medical surveillance can, however, play a very important role in protecting your health. You are strongly encouraged, therefore, to participate in a meaningful fashion. The standard contains a multiple physician review mechanism which will give you a chance to have a physician of your choice directly participate in the medical surveillance program. If you are dissatisfied with an examination by a physician chosen by your employer, you can select a second physician to conduct an independent analysis. The two doctors would attempt to resolve any differences of opinion, and select a third physician to resolve any firm dispute. Generally your employer will choose the physician who conducts medical surveillance under the lead standard—unless you and your employer can agree on the choice of a physician or physicians. Some companies and unions have agreed in advance, for example, to use certain independent medical laboratories or panels of physicians. Any of these arrangements are acceptable so long as required medical surveillance is made available to workers.

The standard requires your employer to provide certain information to a physician to aid in their examination of you. This information includes:

- ◆ The standard and its appendices,
- ◆ A description of your duties as they relate to occupational lead exposure,
- ◆ Your exposure level or anticipated exposure level,
- ◆ A description of any personal protective equipment you wear,
- ◆ Prior blood lead level results, and
- ◆ Prior written medical opinions concerning you that the employer has.

After a medical examination or consultation the physician must prepare a written report which must contain:

- ◆ The physician's opinion as to whether you have any medical condition which places you at increased risk of material impairment to health from exposure to lead,
- ◆ Any recommended special protective measures to be provided to you,
- ◆ Any blood lead level determinations, and
- ◆ Any recommended limitation on your use of respirator.

This last element must include a determination of whether you can wear a powered air purifying respirator (PAPR) if you are found unable to wear a negative pressure respirator.

The medical surveillance program of the lead standard may at some point in time serve to notify certain workers that they have acquired a disease or other adverse medical condition as a result of occupational lead exposure. If this is true, these workers might have legal rights to compensation from public agencies, their employers, firms that supply hazardous

products to their employers, or other persons. Some states have laws, including worker compensation laws, that disallow a worker who learns of a job-related health impairment to sue, unless the worker sues within a short period of time after learning of the impairment. (This period of time may be a matter of months or years.) An attorney can be consulted about these possibilities. It should be stressed that WISHA is in no way trying to either encourage or discourage claims or lawsuits. However, since results of the standard's medical surveillance program can significantly affect the legal remedies of a worker who has acquired a job-related disease or impairment, it is proper for WISHA to make you aware of this.

The medical surveillance section of the standard also contains provisions dealing with chelation. Chelation is the use of certain drugs (administered in pill form or injected into the body) to reduce the amount of lead absorbed in body tissues. Experience accumulated by the medical and scientific communities has largely confirmed the effectiveness of this type of therapy for the treatment of very severe lead poisoning. On the other hand, it has also been established that there can be a long list of extremely harmful side effects associated with the use of chelating agents. The medical community has balanced the advantages and disadvantages resulting from the use of chelating agents in various circumstances and has established when the use of these agents is acceptable. The standard includes these accepted limitations due to a history of abuse of chelation therapy by some lead companies. The most widely used chelating agents are calcium disodium EDTA, (Ca Na₂ EDTA), Calcium Disodium Versenate (Versenate), and d-penicillamine (penicillamine or Cupramine).

The standard prohibits "prophylactic chelation" of any employee by any person the employer retains, supervises or controls. "Prophylactic chelation" is the routine use of chelating or similarly acting drugs to prevent elevated blood levels in workers who are occupationally exposed to lead, or the use of these drugs to routinely lower blood lead levels to pre-designated concentrations believed to be "safe". It should be emphasized that where an employer takes a worker who has no symptoms of lead poisoning and has chelation carried out by a physician (either inside or outside of a hospital) solely to reduce the worker's blood lead level, that will generally be considered prophylactic chelation. The use of a hospital and a physician does not mean that prophylactic chelation is not being performed. Routine chelation to prevent increased or reduce current blood lead levels is unacceptable whatever the setting.

The standard allows the use of "therapeutic" or "diagnostic" chelation if administered under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring. Therapeutic chelation responds to severe lead poisoning where there are marked symptoms. Diagnostic chelation involved giving a patient a dose of the drug then collecting all urine excreted for some period of time as an aid to the diagnosis of lead poisoning.

In cases where the examining physician determines that chelation is appropriate, you must be notified in writing of this fact before such treatment. This will inform you of a

potentially harmful treatment, and allow you to obtain a second opinion.

(9) Medical removal protection—WAC 296-155-17623.

Excessive lead absorption subjects you to increased risk of disease. Medical removal protection (MRP) is a means of protecting you when, for whatever reasons, other methods, such as engineering controls, work practices, and respirator, have failed to provide the protection you need. MRP involves the temporary removal of a worker from their regular job to a place of significantly lower exposure without any loss of earnings, seniority, or other employment rights or benefits. The purpose of this program is to cease further lead absorption and allow your body to naturally excrete lead which has previously been absorbed. Temporary medical removal can result from an elevated blood lead level, or a medical opinion. For up to 18 months, or for as long as the job the employee was removed from lasts, protection is provided as a result of either form of removal. The vast majority of removed workers, however, will return to their former jobs long before this eighteen month period expires.

You may also be removed from exposure even if your blood lead level is below 50 μ /dl if a final medical determination indicates that you temporarily need reduced lead exposure for medical reasons. If the physician who is implementing your employers medical program makes a final written opinion recommending your removal or other special protective measures, your employer must implement the physician's recommendation. If you are removed in this manner, you may only be returned when the doctor indicates that it is safe for you to do so.

The standard does not give specific instructions dealing with what an employer must do with a removed worker. Your job assignment upon removal is a matter for you, your employer and your union (if any) to work out consistent with existing procedures for job assignments. Each removal must be accomplished in a manner consistent with existing collective bargaining relationships. Your employer is given broad discretion to implement temporary removals so long as no attempt is made to override existing agreements. Similarly, a removed worker is provided no right to veto an employer's choice which satisfies the standard.

In most cases, employers will likely transfer removed employees to other jobs with sufficiently low lead exposure. Alternatively, a worker's hours may be reduced so that the time weighted average exposure is reduced, or they may be temporarily laid off if no other alternative is feasible.

In all of these situation, MRP benefits must be provided during the period of removal—i.e., you continue to receive the same earnings, seniority, and other rights and benefits you would have had if you had not been removed. Earnings includes more than just your base wage; it includes overtime, shift differentials, incentives, and other compensation you would have earned if you had not been removed. During the period of removal you must also be provided with appropriate follow-up medical surveillance. If you were removed because your blood lead level was too high, you must be provided with a monthly blood test. If a medical opinion caused your removal, you must be provided medical tests or examinations that the doctor believes to be appropriate. If you do

not participate in this follow up medical surveillance, you may lose your eligibility for MRP benefits.

When you are medically eligible to return to your former job, your employer must return you to your "former job status." This means that you are entitled to the position, wages, benefits, etc., you would have had if you had not been removed. If you would still be in your old job if no removal had occurred that is where you go back. If not, you are returned consistent with whatever job assignment discretion your employer would have had if no removal had occurred. MRP only seeks to maintain your rights, not expand them or diminish them.

If you are removed under MRP and you are also eligible for worker compensation or other compensation for lost wages, your employer's MRP benefits obligation is reduced by the amount that you actually receive from these other sources. This is also true if you obtain other employment during the time you are laid off with MRP benefits.

The standard also covers situations where an employer voluntarily removes a worker from exposure to lead due to the effects of lead on the employee's medical condition, even though the standard does not require removal. In these situations MRP benefits must still be provided as though the standard required removal. Finally, it is important to note that in all cases where removal is required, respirator cannot be used as a substitute. Respirator may be used before removal becomes necessary, but not as an alternative to a transfer to a low exposure job, or to a lay-off with MRP benefits.

(10) Employee information and training—WAC 296-155-17625.

Your employer is required to provide an information and training program for all employees exposed to lead above the action level or who may suffer skin or eye irritation from lead compounds such as lead arsenate or lead azide. The program must train these employees regarding the specific hazards associated with their work environment, protective measures which can be taken, including the contents of any compliance plan in effect, the danger of lead to their bodies (including their reproductive systems), and their rights under the standard. All employees must be trained prior to initial assignment to areas where there is a possibility of exposure over the action level.

This training program must also be provided at least annually thereafter unless further exposure above the action level will not occur.

(11) Signs—WAC 296-155-17627.

The standard requires that the following warning sign be posted in work areas where the exposure to lead exceeds the PEL:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

These signs are to be posted and maintained in a manner which assures that the legend is readily visible.

(12) Recordkeeping—WAC 296-155-17629.

Your employer is required to keep all records of exposure monitoring for airborne lead. These records must include the name and job classification of employees measured,

details of the sampling and analytical techniques, the results of this sampling, and the type of respiratory protection being worn by the person sampled. Such records are to be retained for at least 30 years. Your employer is also required to keep all records of biological monitoring and medical examination results. These records must include the names of the employees, the physician's written opinion, and a copy of the results of the examination. Medical records must be preserved and maintained for the duration of employment plus 30 years. However, if the employee's duration of employment is less than one year, the employer need not retain that employee's medical records beyond the period of employment if they are provided to the employee upon termination of employment.

Recordkeeping is also required if you are temporarily removed from your job under the medical removal protection program. This record must include your name and Social Security number, the date of your removal and return, how the removal was or is being accomplished, and whether or not the reason for the removal was an elevated blood lead level. Your employer is required to keep each medical removal record only for as long as the duration of an employee's employment.

The standard requires that if you request to see or copy environmental monitoring, blood lead level monitoring, or medical removal records, they must be made available to you or to a representative that you authorize. Your union also has access to these records. Medical records other than BLL's must also be provided upon request to you, to your physician or to any other person whom you may specifically designate. Your union does not have access to your personal medical records unless you authorize their access.

(13) Observation of monitoring—WAC 296-155-17631.

When air monitoring for lead is performed at your workplace as required by this standard, your employer must allow you or someone you designate to act as an observer of the monitoring. Observers are entitled to an explanation of the measurement procedure, and to record the results obtained. Since results will not normally be available at the time of the monitoring, observers are entitled to record or receive the results of the monitoring when returned by the laboratory. Your employer is required to provide the observer with any personal protective devices required to be worn by employees working in the area that is being monitored. The employer must require the observer to wear all such equipment and to comply with all other applicable safety and health procedures.

(14) Startup date—WAC 296-155-17635.

Employer obligations under the standard begin as of that date with full implementation of engineering controls as soon as possible but no later than within 4 months, and all other provisions completed as soon as possible, but no later than within 2 months from the effective date.

(15) For additional information.

(a) A copy of the standard for lead in construction can be obtained free of charge by calling or writing to the department of labor and industries, Post Office Box 44620, Mailstop 44620, Olympia, Washington 98504-4620: Telephone (360) 956-5527.

(b) Additional information about the standard, its enforcement, and your employer's compliance can be

obtained from the nearest office listed in your telephone directory under the state of Washington, department of labor and industries.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-17652, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17652, filed 10/29/93, effective 12/10/93.]

WAC 296-155-17656 Repealed. See Disposition Table at beginning of this chapter.

WAC 296-155-220 Respiratory protection. The respiratory protection requirements applicable to construction work under this section are identical to those set forth in chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-220, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-155-220, filed 7/13/83, effective 9/12/83; Order 74-26, § 296-155-220, filed 5/7/74, effective 6/6/74.]

WAC 296-155-270 Flammable and combustible liquids. (1) General requirements.

(a) Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Approved metal safety cans, or department of transportation approved containers shall be used for the handling and use of flammable liquids in quantities five gallons or less, except that this shall not apply to those flammable liquid materials which are highly viscid (extremely hard to pour), which may be used and handled in original shipping containers. For quantities of one gallon or less, only the original container may be used for storage, use, and handling of flammable liquids.

(b) Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the safe passage of people.

(c) Flammable and combustible liquid containers shall be legibly marked to indicate their contents. Each storage container for flammable or combustible liquids, with a capacity of 50 gallons or more, shall have the contents of the container identified by a sign of clearly visible contrasting colors with letters at least 3 inches high, painted on the container at the discharge valve and at the fill point.

(d) Gasoline shall not be used as a solvent or a cleaning agent.

(2) Indoor storage of flammable and combustible liquids.

(a) No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet. For storage of liquid petroleum gas, see WAC 296-155-275.

(b) Quantities of flammable and combustible liquid in excess of 25 gallons shall be stored in an acceptable or approved cabinet meeting the following requirements:

(i) Acceptable wooden storage cabinets shall be constructed in the following manner, or equivalent: The bottom, sides, and top shall be constructed of an exterior grade of plywood at least 1 inch in thickness, which shall not break down or delaminate under standard fire test conditions. All joints shall be rabbeted and shall be fastened in two directions with

flathead wood screws, when more than one door is used, there shall be a rabbeted overlap of not less than 1 inch. Steel hinges shall be mounted in such a manner as to not lose their holding capacity due to loosening or burning out of the screws when subjected to fire. Such cabinets shall be painted inside and out with fire retardant paint.

(ii) Approved metal storage cabinets will be acceptable.

(iii) Cabinets shall be labeled in conspicuous lettering, "Flammable—Keep fire away."

(c) Not more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet. Not more than three such cabinets may be located in a single storage area. Quantities in excess of this shall be stored in an inside storage room.

(d)(i) Inside storage room shall be constructed to meet the required fire-resistive rating for their use. Such construction shall comply with the test specifications set forth in Standard Methods of Fire Test of Building Construction and Material, NFPA 251-1972.

(ii) Where an automatic extinguishing system is provided, the system shall be designed and installed in an approved manner. Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the storage area shall be at least 4 inches below the surrounding floor. Openings shall be provided with approved self-closing fire doors. The room shall be liquid-tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench, inside of the room, which drains to a safe location. Where other portions of the building or other buildings are exposed, windows shall be protected as set forth in the Standard for Fire Doors and Windows, NFPA No. 80-1983, for Class E or F openings. Wood of at least 1-inch nominal thickness may be used for shelving, racks, dunnage, scuffboards, floor overlay and similar installations.

(iii) Materials which will react with water and create a fire hazard shall not be stored in the same room with flammable or combustible liquids.

(iv) Storage in inside storage rooms shall comply with Table D-2 following:

TABLE D-2

Fire protection provided	Fire resistance	Maximum size	Total allowable quantities gals./sq. ft./floor area
Yes	2 hrs.	500 sq. ft.	10
No	2 hrs.	500 sq. ft.	4
Yes	1 hr.	150 sq. ft.	5
No	1 hr.	150 sq. ft.	2

Note: Fire protection system shall be sprinkler, water spray, carbon dioxide or other system approved by a nationally recognized testing laboratory for this purpose.

(v) Electrical wiring and equipment located in inside storage rooms shall be approved for Class 1, Division 1, hazardous locations. For definition of Class 1, Division 1, hazardous locations, see WAC 296-155-456.

(vi) Every inside storage room shall be provided with either a gravity or a mechanical exhausting system. Such system shall commence not more than 12 inches above the floor and be designed to provide for a complete change of air within the room at least 6 times per hour. If a mechanical exhausting system is used, it shall be controlled by a switch located outside of the door. The ventilating equipment and any lighting fixtures shall be operated by the same switch. An electric pilot light shall be installed adjacent to the switch if flammable liquids are dispensed within the room. Where gravity ventilation is provided, the fresh air intake, as well as the exhausting outlet from the room, shall be on the exterior of the building in which the room is located.

(vii) In every inside storage room there shall be maintained one clear aisle at least 3 feet wide. Containers over 30 gallons capacity shall not be stacked one upon the other.

(viii) Flammable and combustible liquids in excess of that permitted in inside storage rooms shall be stored outside of buildings in accordance with subsection (3) of this section.

(3) Storage outside buildings.

(a) Storage of containers (not more than 60 gallons each) shall not exceed 1,100 gallons in any one pile or area. Piles or groups of containers shall be separated by a 5-foot clearance. Piles or groups of containers shall not be nearer than 20 feet to a building.

(b) Within 200 feet of each pile of containers, there shall be a 12-foot-wide access way to permit approach of fire control apparatus.

(c) The storage area shall be graded in a manner to divert possible spills away from buildings or other exposures, or shall be surrounded by a curb or earth dike at least 12 inches high. When curbs or dikes are used, provisions shall be made for draining off accumulations of ground or rain water, or spills of flammable or combustible liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.

(d) Outdoor portable tank storage.

(i) Portable tanks shall not be nearer than 20 feet from any building. Two or more portable tanks, grouped together, having a combined capacity in excess of 2,200 gallons, shall be separated by a 5-foot-clear area. Individual portable tanks exceeding 1,100 gallons shall be separated by a 5-foot-clear area.

(ii) Within 200 feet of each portable tank, there shall be a 12-foot-wide access way to permit approach of fire control apparatus.

(e) Storage areas shall be kept free of weeds, debris, and other combustible material not necessary to the storage.

(f) Portable tanks, not exceeding 660 gallons, shall be provided with emergency venting and other devices, as required by chapters III and IV of NFPA 30-1972, The Flammable and Combustible Liquids Code.

(g) Portable tanks, in excess of 660 gallons, shall have emergency venting and other devices, as required by chapters II and III of the Flammable and Combustible Liquids Code, NFPA 30-1972.

(4) Fire control for flammable or combustible liquid storage.

(a) At least one portable fire extinguisher, having a rating of not less than 20-B units, shall be located outside of, but not

more than 10 feet from, the door opening into any room used for storage of more than 60 gallons of flammable or combustible liquids.

(b) At least one portable fire extinguisher having a rating of not less than 20-B units shall be located not less than 25 feet, nor more than 75 feet, from any flammable liquid storage area located outside.

(c) When sprinklers are provided, they shall be installed in accordance with the Standard for the Installation of Sprinkler Systems, NFPA 13-1972.

(d) At least one portable fire extinguisher having a rating of not less than 20-B:C units shall be provided on all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.

(5) Dispensing liquids.

(a) Areas in which flammable or combustible liquids are transferred at the same time, in quantities greater than 5 gallons from one tank or container to another tank or container, shall be separated from other operations by 25-foot distance or by construction having a fire-resistance of at least 1 hour. Drainage or other means shall be provided to control spills. Adequate natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.

(b) Transfer flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded).

(c) Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or tanks within a building or outside only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container, or portable tanks, by gravity or pump, through an approved self-closing valve. Transferring by means of air pressure on the container or portable tank is prohibited.

(d) The dispensing units shall be protected against collision damage.

(e) Dispensing devices and nozzles for flammable liquids shall be of an approved type, as required by WAC 296-24-33015.

(6) Handling liquids at point of final use.

(a) Flammable liquids shall be kept in closed containers when not actually in use.

(b) Leakage or spillage of flammable or combustible liquids shall be disposed of promptly and safely.

(c) Flammable liquids shall be used only where there are no open flames or other sources of ignition within 50 feet of the operation, unless conditions warrant greater clearance.

(7) Service and refueling areas.

(a) Flammable or combustible liquids shall be stored in approved closed containers, in tanks located underground, or in aboveground portable tanks.

(b) The tank trucks shall comply with the requirements covered in the Standard for Tank Vehicles for Flammable and Combustible Liquids, NFPA No. 385-1977.

(c) The dispensing hose shall be an approved type.

(d) The dispensing nozzle shall be an approved automatic-closing type.

(e) Underground tanks shall not be abandoned.

(f) Clearly identified and easily accessible switch(es) shall be provided at a location remote from dispensing devices to shut off the power to all dispensing devices in the event of an emergency.

(g)(i) Heating equipment of an approved type may be installed in the lubrication or service area where there is no dispensing or transferring of flammable liquids, provided the bottom of the heating unit is at least 18 inches above the floor and is protected from physical damage.

(ii) Heating equipment installed in lubrication or service areas, where flammable liquids are dispensed, shall be of an approved type for garages, and shall be installed at least 8 feet above the floor.

(h) There shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable or combustible liquids.

(i) Conspicuous and legible signs prohibiting smoking shall be posted.

(j) The motor of any equipment being fueled shall be shut off during the fueling operation.

(k) Each service or fueling area shall be provided with at least one fire extinguisher having a rating of not less than 20BC located so that an extinguisher will be within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service area.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-155-270, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-155-270, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-270, filed 1/21/86; Order 74-26, § 296-155-270, filed 5/7/74, effective 6/6/74.]

WAC 296-155-367 Masonry saws. (1) Guarding.

(a) Masonry saws shall be guarded by semicircular enclosures over the blade.

(b) A method for retaining blade fragments shall be incorporated into the design of the semicircular enclosure.

(2) Safety latch. A safety latch shall be installed on notched saws to prevent the motor and cutting head assembly from lifting out of the notches.

(3) Blade speed. Blade speed shall be maintained in accordance with the manufacturer's specifications.

(4) Exhaust and eye protection.

(a) All table mounted masonry saws shall be equipped with a mechanical means of exhausting dust into a covered receptacle or be provided with water on the saw blade for dust control. The operator and any nearby worker shall wear appropriate eye protection in accordance with WAC 296-155-215.

(b) All portable hand-held masonry saw operators shall wear appropriate eye and respiratory protection in accordance with WAC 296-155-215 and chapter 296-62 WAC, Part E.

(5) Grounding. The motor frames of all stationary saws shall be grounded through conduit, water pipe, or a driven ground. Portable saws shall be grounded through three-pole cords attached to grounded electrical systems.

(6) Inspection. Masonry saws shall be inspected at regular intervals and maintained in safe operating condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-367, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-155-367, filed 8/13/90, effective 9/24/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-367, filed 1/21/86.]

WAC 296-155-615 Material handling equipment.

(1) Earthmoving equipment; general.

(a) These rules apply to the following types of earthmoving equipment: Scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment. The promulgation of specific rules for compactors and rubber-tired "skid-steer" equipment is reserved pending consideration of standards currently being developed.

(b) Seat belts.

(i) Seat belts shall be provided on all equipment covered by this section and shall meet the requirements of the Society of Automotive Engineers, J386-1969, Seat Belts for Construction Equipment. Seat belts for agricultural and light industrial tractors shall meet the seat belt requirements of Society of Automotive Engineers J333a-1970, Operator Protection for Agricultural and Light Industrial Tractors.

(ii) Seat belts need not be provided for equipment which is designed only for standup operation.

(iii) Seat belts shall not be provided for equipment which does not have rollover protective structure (ROPS) or adequate canopy protection.

(c) Access roadways and grades.

(i) No employer shall move or cause to be moved construction equipment or vehicles upon any access roadway or grade unless the access roadway or grade is constructed and maintained to accommodate safely the movement of the equipment and vehicles involved.

(ii) Every emergency access ramp and berm used by an employer shall be constructed to restrain and control runaway vehicles.

(d) Brakes. All earthmoving equipment mentioned in WAC 296-155-615 (1)(a) shall have a service braking system capable of stopping and holding the equipment fully loaded, as specified in Society of Automotive Engineers SAE-J237, Loader Dozer-1971, J236, Graders-1971, and J319b, Scrapers-1971. Brake systems for self-propelled rubber-tired off-highway equipment manufactured after January 1, 1972 shall meet the applicable minimum performance criteria set forth in the following Society of Automotive Engineers Recommended Practices:

Self-propelled scrapers	_____	SAE J319b-1971
Self-propelled graders	_____	SAE J236-1971
Trucks and wagons	_____	SAE J166-1971
Front end loaders and dozer	_____	SAE J237-1971

(e) Fenders. Pneumatic-tired earthmoving haulage equipment (trucks, scrapers, tractors, and trailing units) whose maximum speed exceeds 15 miles per hour, shall be equipped with fenders on all wheels to meet the requirements of Society of Automotive Engineers SAE J321a-1970, Fenders for Pneumatic-Tired Earthmoving Haulage Equipment.

An employer may, of course, at any time seek to show under WAC 296-155-010, that the uncovered wheels present no hazard to personnel from flying materials.

(f) Rollover protective structures (ROPS). See Part V of this chapter for requirements for rollover protective structures and overhead protection.

(g) Rollover protective structures for off-highway trucks. The promulgation of standards for rollover protective structures for off-highway trucks is reserved pending further study and development.

(h) Specific effective dates—Brakes and fenders. Equipment mentioned in WAC 296-155-615 (d) and (e) and manufactured after January 1, 1972, which is used by any employer after that date, shall comply with the applicable rules prescribed therein concerning brakes. Equipment mentioned in WAC 296-155-615 (d) and (e) and manufactured before January 1, 1972, which is used by any employer after that date, shall meet the applicable rules prescribed herein not later than October 1, 1974. It should be noted that employers may request variations from the applicable brakes standards required by this part. Employers wishing to seek variations from the applicable brakes rules may submit any requests for variations in accordance with WAC 296-155-010. Any statements should specify how the variation would protect the safety of the employees by providing for any compensating restrictions on the operation of equipment.

(i) Audible alarms.

(i) All bidirectional machines, such as rollers, compactors, front-end loaders, bulldozers, and similar equipment, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. The horn shall be maintained in an operative condition.

(ii) No employer shall permit earthmoving or compacting equipment which has an obstructed view to the rear to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level or an employee signals that it is safe to do so.

(iii) In circumstances where the surrounding noise level is of such amplitude that reverse signal alarms are not effective, amber strobe lights shall be used.

(iv) Operators of equipment which does not have an obstructed view to the rear shall look to the rear while operating the equipment in reverse.

(j) Scissor points. Scissor points on all front-end loaders, which constitute a hazard to the operator during normal operation, shall be guarded.

(k) Tractor motors shall be cranked only by operators or other experienced persons.

(l) Waterproof and comfortable seat cushions shall be provided on tractors at all times when working.

(m) Riders, except mechanics and persons in training to operate equipment, shall not be allowed on equipment unless a seat with a seatbelt is provided and used.

(n) Winch lines shall be maintained in good condition and provided with spliced eye, knob or hook in working end, except under conditions where unspliced end is required.

(o) No repairs on blade or dozer equipment shall be initiated unless motor has been stopped and dozer blade is rest-

ing on the ground or securely blocked. The same shall apply to carry-all gates.

(p) Bulldozer blades and carryall gates shall rest on the ground or on blocking when machines are not in operation.

(q) Operator shall not leave controls of tractor with master clutch engaged.

(r) Personnel shall not get on or off machine while machine is in motion.

(s) Where excessive dust conditions are created, such areas shall be sprinkled with water to maintain dust at a minimum.

(t) Respirators shall be worn by operators when subject to harmful dust exposure.

(2) Excavating and other equipment.

(a) Tractors covered in subsection (1) of this section shall have seat belts as required for the operators when seated in the normal seating arrangement for tractor operation, even though backhoes, breakers, or other similar attachments are used on these machines for excavating or other work.

(b) For the purposes of this part and of Part L of this chapter, the nomenclatures and descriptions for measurement of dimensions of machinery and attachments shall be as described in Society of Automotive Engineers 1970 Handbook, pages 1088 through 1103.

(c) The safety requirements, ratios, or limitations applicable to machines or attachment usage covered in Power Crane and Shovel Association's Standards No. 1 and No. 2 of 1968, and No. 3 of 1969, shall be complied with, and shall apply to cranes, machines, and attachments under this part.

(3) Lifting and hauling equipment (other than equipment covered under Part L of this chapter). Industrial trucks (including forklifts) shall meet the requirements of WAC 296-24-230, 296-155-605 and the following:

(a) Lift trucks, stackers, etc., shall have the rated capacity clearly posted on the vehicle so as to be clearly visible to the operator. When auxiliary removable counter-weights are provided by the manufacturer, corresponding alternate rated capacities also shall be clearly shown on the vehicle. These ratings shall not be exceeded.

(b) No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the manufacturer's or professional engineer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

(c) If a load is lifted by two or more trucks working in unison, the proportion of the total load carried by any one truck shall not exceed its capacity.

(d) Steering or spinner knobs shall not be attached to the steering wheel unless the steering mechanism is of a type that prevents road reactions from causing the steering handwheel to spin. The steering knob shall be mounted within the periphery of the wheel.

(e) All high lift rider industrial trucks shall be equipped with overhead guards which meet the configuration and structural requirements as defined in paragraph 502 of American National Standards Institute B56.1-1975, Safety Standards for Powered Industrial Trucks.

(f) All industrial trucks in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in American National Standards Institute B56.1-1975, Safety Standards for Powered Industrial Trucks.

(g) Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.

(h) When a forklift truck is used for elevating workers a platform shall be specifically built for that purpose and shall comply with the following requirements:

(i) The platform shall be securely attached to the forks and shall have standard guardrails and toeboards on all open sides.

(ii) The hydraulic system of the forklift shall be so designed that the lift mechanism will not drop faster than one hundred thirty-five feet per minute in the event of a failure in any part of the system. Forklifts used for elevating platforms shall be identified that they are so designed.

(iii) A safety strap shall be installed or the control lever shall be locked to prevent the boom from tilting.

(iv) An operator shall be at the controls of the forklift equipment while persons are on the platform.

(v) The operator shall be in the normal operating position while raising or lowering the platform.

(vi) The vehicle shall not travel from point to point while workers are on the platform except that inching or maneuvering at very slow speed is permissible.

(vii) The area between workers on the platform and the mast shall be adequately guarded to prevent contact with chains or other shear points.

(viii) All platforms shall be visually inspected daily or before each use by the person in charge of the work being performed, and shall be tested as frequently as is necessary to maintain minimum safety factors.

(ix) Whenever a truck, except for high lift order picker trucks, is equipped with vertical hoisting controls elevatable with the lifting carriage or forks, the following precautions shall be taken for the protection of personnel being elevated.

(A) Provide a platform secured to the lifting carriage and/or forks.

(B) Provide means whereby personnel on the platform can shut off power to the truck.

(C) Provide such protection from falling objects as indicated necessary by the operating conditions.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-155-615, filed 12/21/99, effective 3/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-05-046, § 296-155-615, filed 2/13/98, effective 4/15/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-155-615, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-615, filed 1/21/86; Order 74-26, § 296-155-615, filed 5/7/74, effective 6/6/74.]

WAC 296-155-655 General protection requirements.

(1) Surface encumbrances. All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

(2) Underground installations.

(a) The location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other under-

ground installations that reasonably may be expected to be encountered during excavation work, shall be located prior to opening an excavation.

(b) Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to locate the underground utility installation prior to the start of actual excavation.

(c) When excavation operations approach the location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.

(d) While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees.

(3) Access and egress.

(a) Structural ramps.

(i) Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

(ii) Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement.

(iii) Structural members used for ramps and runways shall be of uniform thickness.

(iv) Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

(v) Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

(b) Means of egress from trench excavations. A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.

(4) Exposure to vehicular traffic. Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

(5) Exposure to falling loads. No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with WAC 296-155-610 (2)(g), to provide adequate protection for the operator during loading and unloading operations.

(6) Warning system for mobile equipment. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

(7) Hazardous atmospheres.

(a) Testing and controls. In addition to the requirements set forth in parts B-1, C, and C-1 of this chapter (296-155 WAC) to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:

(i) Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.

(ii) Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation [in accordance with parts] [as required by chapter 296-62 WAC, part E and by part] B-1 [and C] of this chapter [respectively].

(iii) Adequate precaution shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 10 percent of the lower flammable limit of the gas.

(iv) When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

(b) Emergency rescue equipment.

(i) Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

(ii) Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

Note: See chapter 296-62 WAC, Part M for additional requirements applicable to confined space operations.

(8) Protection from hazards associated with water accumulation.

(a) Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

(b) If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

(c) If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or

other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person and compliance with subdivisions (a) and (b) of this subsection.

(9) Stability of adjacent structures.

(a) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

(b) Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:

(i) A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or

(ii) The excavation is in stable rock; or

(iii) A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or

(iv) A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

(c) Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

(10) Protection of employees from loose rock or soil.

(a) Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

(b) Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

(11) Inspections.

(a) Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

(b) Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of

failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

(12) Fall protection.

(a) Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with chapter 296-155 WAC, Part K shall be provided where walkways are 4 feet or more above lower levels.

(b) Adequate barrier physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-155-655, filed 8/17/99, effective 12/1/99; 99-10-071, § 296-155-655, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-24-051, § 296-155-655, filed 11/27/96, effective 2/1/97. Statutory Authority: Chapter 49.17 RCW. 95-10-016, § 296-155-655, filed 4/25/95, effective 10/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-655, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-655, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-655, filed 1/21/86. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-155-655, filed 6/17/81; Order 76-29, § 296-155-655, filed 9/30/76; Order 74-26, § 296-155-655, filed 5/7/74, effective 6/6/74.]

Reviser's note: RCW 34.05.395 requires the use of underlining and deletion marks to indicate amendments to existing rules, and deems ineffectual changes not filed by the agency in this manner. The bracketed material in the above section does not appear to conform to the statutory requirement.

WAC 296-155-66403 Appendix B—Sloping and benching. (1) Scope and application. This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements set forth in WAC 296-155-657 (2)(b).

(2) Definitions.

(a) Actual slope. The slope to which an excavation face is excavated.

(b) Distress. Soil that is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and ravelling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

(c) Maximum allowable slope. The steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

(3) Requirements.

(a) Soil classification. Soil and rock deposits shall be classified in accordance with appendix A of this Part.

(b) Maximum allowable slope. The maximum allowable slope for a soil or rock deposit shall be determined from Table N-1 of this appendix.

(c) Actual slope.

(i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least 1/2 horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with WAC 296-155-655(9).

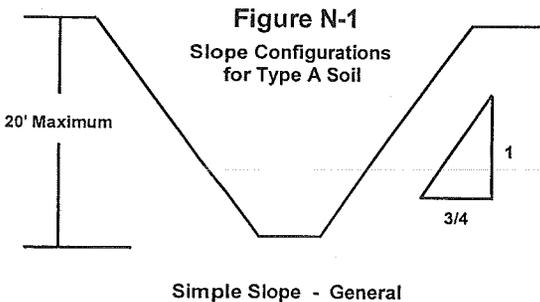
(d) Configurations. Configurations of sloping and benching systems shall be in accordance with Figures N-1 through N-18.

TABLE N-1
MAXIMUM ALLOWABLE SLOPES

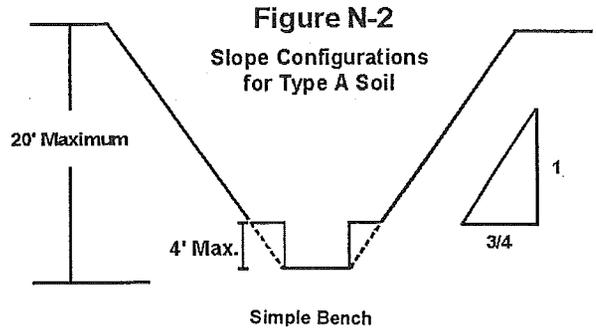
SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H ₁ V) ⁽¹⁾ FOR EXCAVATION LESS THAN 20 FEET DEEP ⁽²⁾
STABLE ROCK	VERTICAL (90°)
TYPE A	3/4: 1 (53°)
TYPE B	1: 1 (45°)
TYPE C	1 1/2: 1 (34°)

Notes:

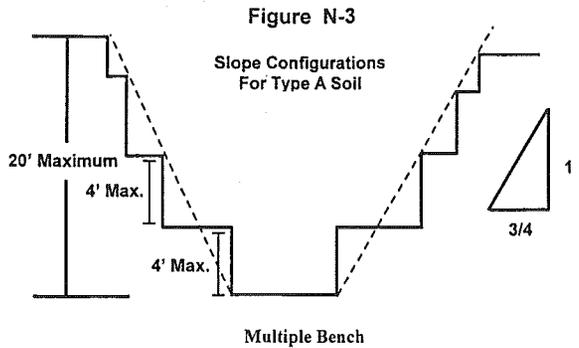
- (1) Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
- (2) Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.



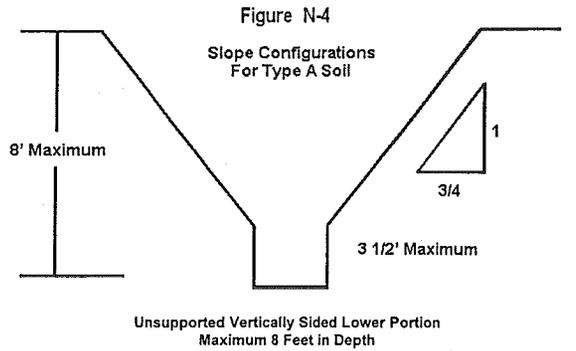
All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4:1.



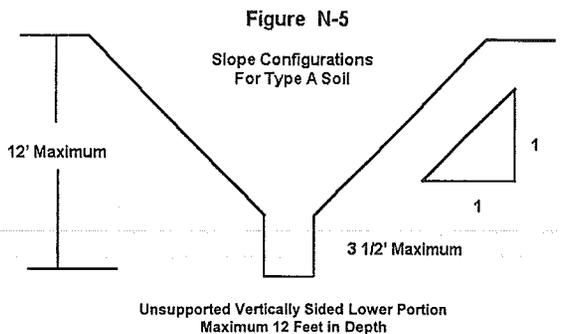
All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4:1 and maximum bench dimensions of 4 feet.



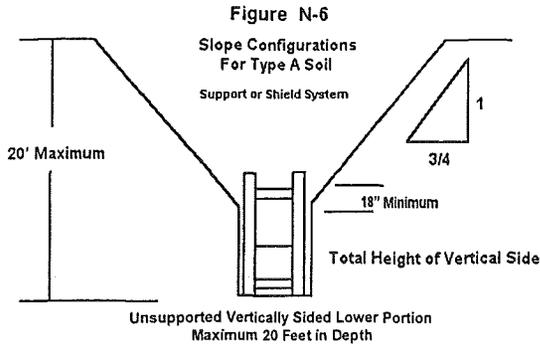
All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4:1 and maximum bench dimensions of 4 feet.



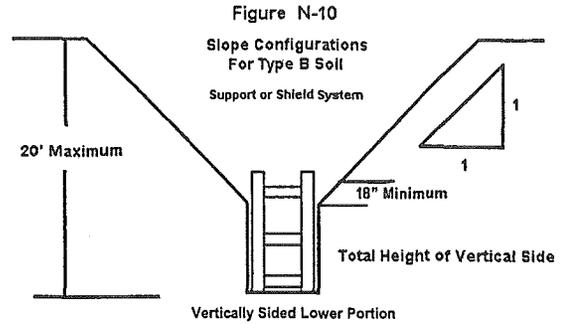
All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3 1/2 feet.



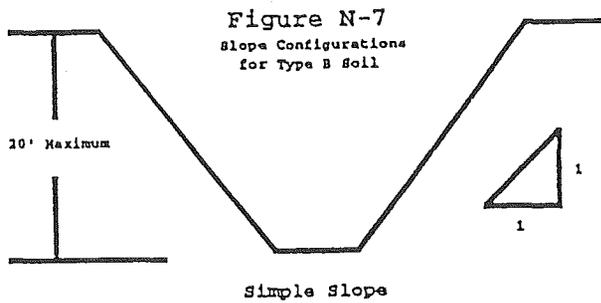
All excavations more than 8 feet but not more than 12 feet in depth which have unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and vertical side of 3 1/2 feet.



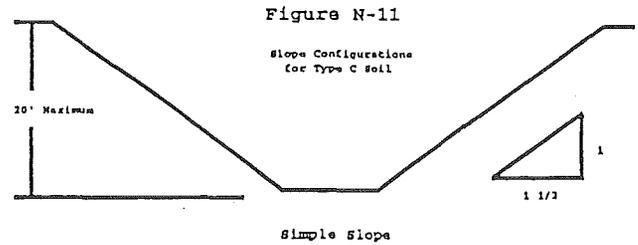
All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side. All other simple slope, compound slope and vertically sided lower portion excavations shall be in accordance with options permitted under WAC 296-155-657(2).



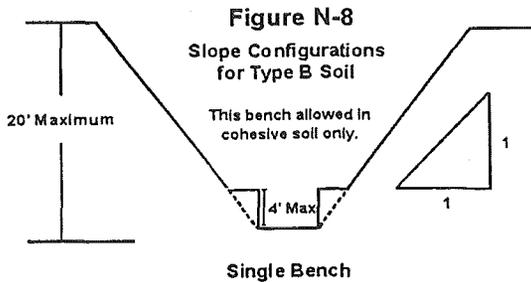
All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1. All other simple slope, compound slope and vertically sided lower portion excavations shall be in accordance with options permitted under WAC 296-155-657(2).



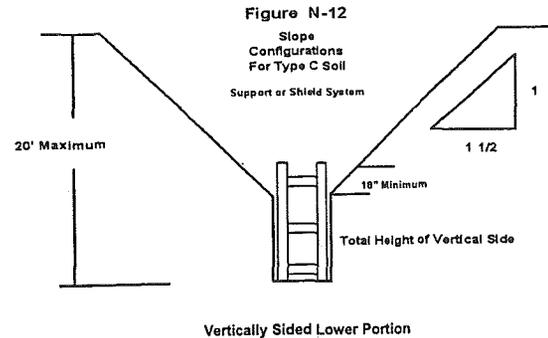
All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.



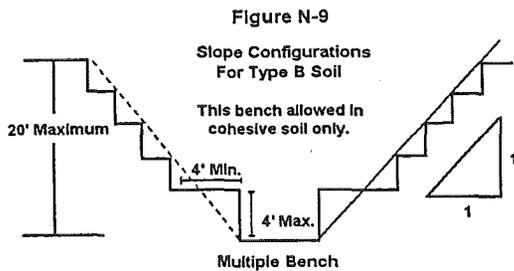
All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1 1/2:1.



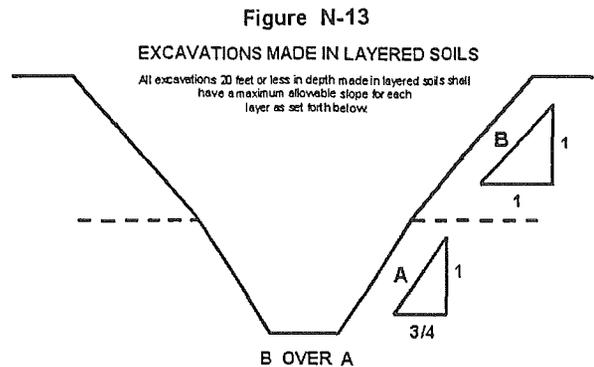
All excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions of 4 feet.



All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1 1/2:1. All other simple slope, compound slope and vertically sided lower portion excavation shall be in accordance with options permitted under WAC 296-155-657(2).



All excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions of 4 feet.



All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.

Figure N-14

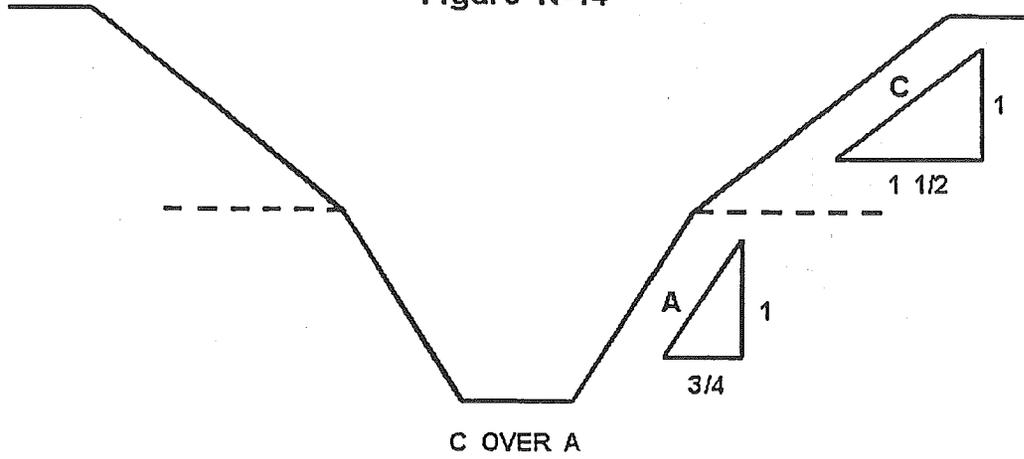


Figure N-15

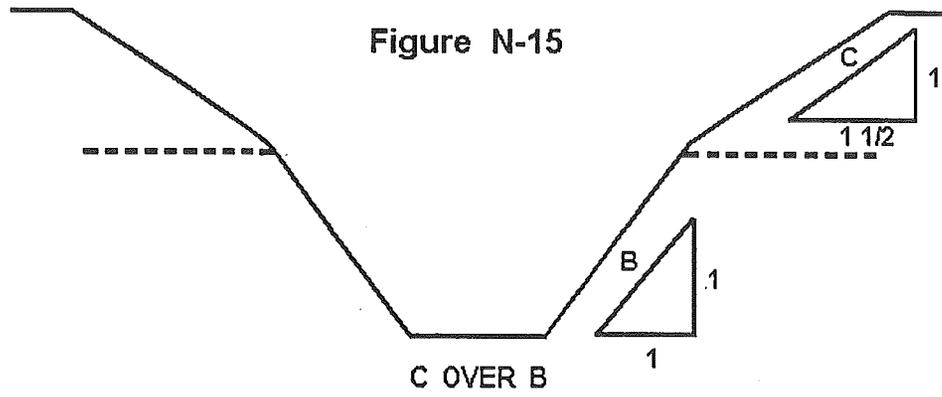


Figure N-16

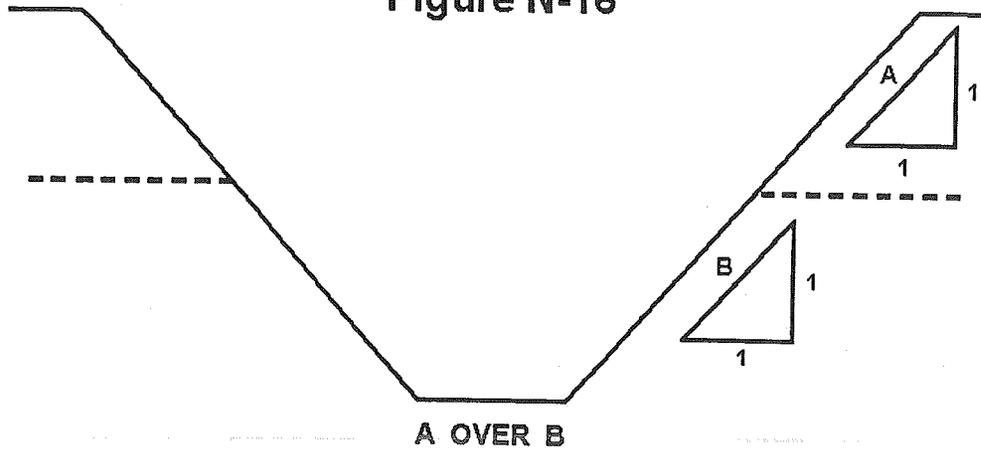


Figure N-17

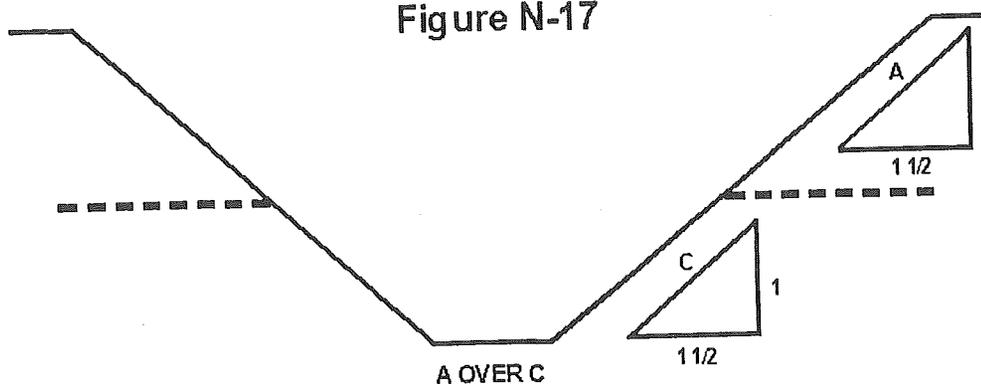
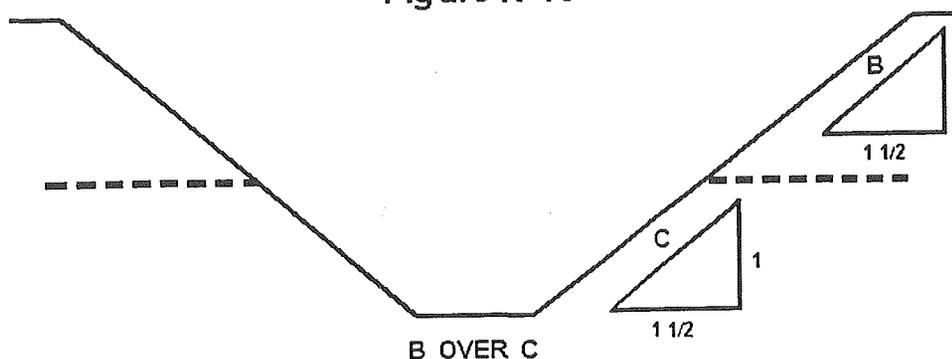


Figure N-18



[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-155-66403, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-66403, filed 10/30/92, effective 12/8/92.]

WAC 296-155-730 Tunnels and shafts. (1) Scope and application.

(a) This section applies to the construction of underground tunnels, shafts, chambers, and passageways. This section also applies to cut-and-cover excavations which are both physically connected to ongoing underground construction operations within the scope of this section, and covered in such a manner as to create conditions characteristic of underground construction.

(b) This section does not apply to excavation and trenching operations covered by Part N of this chapter, such as foundation operations for above-ground structures that are not physically connected to underground construction operations, and surface excavation.

(c) The employer shall comply with the requirements of this part and chapter in addition to applicable requirements of chapter 296-36 WAC, Safety standards—Compressed air work.

(2) Access and egress.

(a) Each operation shall have a check-in/check-out system that will provide positive identification of every employee underground. An accurate record of identification and location of the employees shall be kept on the surface. This procedure is not required when the construction of underground facilities designed for human occupancy has been sufficiently completed so that the permanent environmental controls are effective, and when the remaining con-

struction activity will not cause any environmental hazard, or structural failure within the facilities.

(b) The employer shall provide and maintain safe means of access and egress to all work stations.

(c) The employer shall provide access and egress in such a manner that employees are protected from being struck by excavators, haulage machines, trains, and other mobile equipment.

(d) The employer shall control access to all openings to prevent unauthorized entry underground. Unused chutes, manways, or other openings shall be tightly covered, bulk-headed, or fenced off, and shall be posted with warning signs indicating "keep out" or similar language. Completed or unused sections of the underground facility shall be barricaded.

(3) Safety instruction. All employees shall be instructed in the recognition and avoidance of hazards associated with underground construction activities including, where appropriate, the following subjects:

- (a) Air monitoring;
- (b) Ventilation;
- (c) Confined space entry procedures;
- (d) Permit-required confined space entry procedures;
- (e) Illumination;
- (f) Communications;
- (g) Flood control;
- (h) Mechanical equipment;
- (i) Personal protective equipment;
- (j) Explosives;
- (k) Fire prevention and protection; and

(l) Emergency procedures, including evacuation plans and check-in/check-out systems.

(4) Notification.

(a) Oncoming shifts shall be informed of any hazardous occurrences or conditions that have affected, or might affect employee safety, including liberation of gas, equipment failures, earth or rock slides, cave-ins, floodings, fire(s), or explosions.

(b) Information specified in (a) of this subsection shall be recorded in a shift journal which shall be current prior to the end of each shift, and shall be located aboveground.

(c) Oncoming supervisory personnel shall read the notification prior to going underground, and shall signify their understanding of the contents by affixing their respective initials to the log.

(d) The hazard notification log shall be retained on the site until the completion of the project.

(e) The employer shall establish and maintain direct communications for coordination of activities with other employers whose operations at the jobsite affect or may affect the safety of employees underground.

(5) Communications.

(a) When natural unassisted voice communication is ineffective, a power-assisted means of voice communication shall be used to provide communication between the work face, the bottom of the shaft, and the surface.

(b) Two effective means of communication, at least one of which shall be voice communication, shall be provided in all shafts which are being developed or used either for personnel access or for hoisting. Additional requirements for hoist operator communication are contained in subsection (22)(c)(xv) of this section.

(c) Powered communication systems shall operate on an independent power supply, and shall be installed so that the use of or disruption of any one phone or signal location will not disrupt the operation of the system from any other location.

(d) Communication systems shall be tested upon initial entry of each shift to the underground, and as often as necessary at later times, to ensure that they are in working order.

(e) Any employee working alone underground in a hazardous location, who is both out of the range of natural unassisted voice communication and not under observation by other persons, shall be provided with an effective means of obtaining assistance in an emergency.

(6) Emergency provisions. Hoisting capability. When a shaft is used as a means of egress, the employer shall make advance arrangements for power-assisted hoisting capability to be readily available in an emergency, unless the regular hoisting means can continue to function in the event of an electrical power failure at the jobsite. Such hoisting means shall be designed so that the load hoist drum is powered in both directions of rotation and so that the brake is automatically applied upon power release or failure.

(7) Self-rescuers. The employer must provide self-rescuers certified by the National Institute for Occupational Safety and Health under 42 CFR part 84. The respirators must be immediately available to all employees at work stations in underground areas where employees might be trapped by smoke or gas. The selection, issuance, use, and care of respi-

rators must be in accordance with the requirements of chapter 296-62 WAC, Part E.

(8) Designated person. At least one designated person shall be on duty aboveground whenever any employee is working underground. This designated person shall be responsible for securing immediate aid and keeping an accurate record of the number, identification, and location of employees who are underground in case of emergency. The designated person must not be so busy with other responsibilities that the personnel counting and identification function is encumbered.

(9) Emergency lighting. Each employee underground shall have an acceptable portable hand lamp or cap lamp in his or her work area for emergency use, unless natural light or an emergency lighting system provides adequate illumination for escape.

(10) Rescue teams.

(a) On jobsites where 25 or more employees work underground at one time, the employer shall provide (or make arrangements in advance with locally available rescue services to provide) at least two 5-person rescue teams, one on the jobsite or within one-half hour travel time from the entry point, and the other within 2 hours travel time.

(b) On jobsites where less than 25 employees work underground at one time, the employer shall provide (or make arrangements in advance with locally available rescue services to provide) at least one 5-person rescue team to be either on the jobsite or within one-half hour travel time from the entry point.

(c) Rescue team members shall be qualified in rescue procedures, the use and limitations of breathing apparatus, and the use of fire fighting equipment. Qualifications shall be reviewed not less than annually.

(d) On jobsites where flammable or noxious gases are encountered or anticipated in hazardous quantities, rescue team members shall practice donning and using pressure demand mode, self-contained breathing apparatuses monthly.

(e) The employer shall ensure that rescue teams are familiar with conditions at the jobsite.

(11) Hazardous classifications.

(a) Potentially gassy operations. Underground construction operations shall be classified as potentially gassy if either:

(i) Air monitoring discloses 10 percent or more of the lower explosive limit for methane or other flammable gases measured at 12 inches (304.8 mm) +/- 0.25 inch (6.35 mm) from the roof, face, floor, or walls in any underground work area for more than a 24-hour period; or

(ii) The history of the geographical area or geological formation indicates that 10 percent or more of the lower explosive limit for methane or other flammable gases is likely to be encountered in such underground operations.

(b) Gassy operations. Underground construction operations shall be classified as gassy if:

(i) Air monitoring discloses 10 percent or more of the lower explosive limit for methane or other flammable gases measured at 12 inches (304.8 mm) +/- 0.25 inch (6.35 mm) from the roof, face, floor, or walls in any underground work area for three consecutive days; or

(ii) There has been an ignition of methane or of other flammable gases emanating from the strata that indicates the presence of such gases; or

(iii) The underground construction operation is both connected to an underground work area which is currently classified as gassy and is also subject to a continuous course of air containing the flammable gas concentration.

(c) Declassification to potentially gassy operations. Underground construction gassy operations may be declassified to potentially gassy when air monitoring results remain under 10 percent of the lower explosive limit for methane or other flammable gases for three consecutive days.

(12) Gassy operations—Additional requirements. Only acceptable equipment, maintained in suitable condition, shall be used in gassy operations.

(a) Mobile diesel-powered equipment used in gassy operations shall be either approved in accordance with the requirements of 30 CFR Part 36 (formerly Schedule 31) by MSHA, or shall be demonstrated by the employer to be fully equivalent to such MSHA-approved equipment, and shall be operated in accordance with that part.

(b) Each entrance to a gassy operation shall be prominently posted with signs notifying all entrants of the gassy classification.

(c) Smoking shall be prohibited in all gassy operations and the employer shall be responsible for collecting all personal sources of ignition, such as matches and lighters, from all persons entering a gassy operation.

(d) A fire watch as described in chapter 296-155 WAC, Part H, shall be maintained when hot work is performed.

(e) Once an operation has met the criteria in subsection (11)(a)(i) of this section, warranting classification as gassy, all operations in the affected area, except the following, shall be discontinued until the operation either is in compliance with all of the gassy operation requirements or has been declassified in accordance with (c) of this subsection:

(i) Operations related to the control of the gas concentration;

(ii) Installation of new equipment, or conversion of existing equipment, to comply with this subsection; and

(iii) Installation of above-ground controls for reversing the air flow.

(13) Air quality and monitoring.

(a) General. Air quality limits and control requirements specified in chapter 296-62 WAC, Part H, shall apply except as modified by this subsection.

(b) The employer shall assign a competent person who shall perform all air monitoring required by this section.

(c) Where this section requires monitoring of airborne contaminants "as often as necessary," the competent person shall make a reasonable determination as to which substances to monitor and how frequently to monitor, considering at least the following factors:

(i) Location of jobsite: Proximity to fuel tanks, sewers, gas lines, old landfills, coal deposits, and swamps;

(ii) Geology: Geological studies of the jobsite, particularly involving the soil type and its permeability;

(iii) History: Presence of air contaminants in nearby jobsites, changes in levels of substances monitored on the prior shift; and

(iv) Work practices and jobsite conditions: The use of diesel engines, use of explosives, use of fuel gas, volume and flow of ventilation, visible atmospheric conditions, decompression of the atmosphere, welding, cutting and hot work, and employees' physical reactions to working underground.

(d) The employer shall provide testing and monitoring instruments which are capable of achieving compliance with the provisions of this subsection, and:

(i) Shall maintain the testing and monitoring instruments in good condition;

(ii) Shall calibrate the instruments on a frequency not to exceed 6 months.

(e) Exposure to airborne contaminants shall not exceed the levels established by chapter 296-62 WAC, Part H.

(f) Respirators shall not be substituted for environmental control measures. However, where environmental controls have not yet been developed, or when necessary by the nature of the work involved (for example, welding, sand blasting, lead burning), an employee may work for short periods of time in concentrations of airborne contaminants which exceed the limit of permissible exposure referred to in (d) of this subsection, if the employee wears a respiratory protective device certified by MSHA-NIOSH for protection against the particular hazards involved, and the selection and use of respirators complies with the provisions of chapter 296-62 WAC, Part E.

(g) Employees shall be withdrawn from areas in which there is a concentration of an airborne contaminant which exceeds the permissible exposure limit listed for that contaminant, except as modified in (t)(i) and (ii) of this subsection.

(h) The atmosphere in all underground work areas shall be tested as often as necessary to assure that the atmosphere at normal atmospheric pressure contains at least 19.5 percent oxygen and no more than 22 percent oxygen.

(i) Tests for oxygen content shall be made before tests for air contaminants.

(j) Field-type oxygen analyzers, or other suitable devices, shall be used to test for oxygen deficiency.

(k) The atmosphere in all underground work areas shall be tested quantitatively for carbon monoxide, nitrogen dioxide, hydrogen sulfide, and other toxic gases, dust, vapors, mists, and fumes as often as necessary to ensure that the permissible exposure limits prescribed in chapter 296-62 WAC, Part H, are not exceeded.

(l) The atmosphere in all underground work areas shall be tested quantitatively for methane and other flammable gases as often as necessary to determine:

(i) Whether action is to be taken under (q), (r), and (s) of this subsection; and

(ii) Whether an operation is to be classified potentially gassy or gassy under subsection (11) of this section.

(m) If diesel-engine or gasoline-engine driven ventilating fans or compressors are used, an initial test shall be made of the inlet air of the fan or compressor, with the engines operating, to ensure that the air supply is not contaminated by engine exhaust.

(n) Testing shall be performed as often as necessary to ensure that the ventilation requirements of subsection (15) of this section are met.

(o) When rapid excavation machines are used, a continuous flammable gas monitor shall be operated at the face with the sensor(s) placed as high and close to the front of the machine's cutter head as practicable.

(p) Whenever air monitoring indicates the presence of 5 ppm or more of hydrogen sulfide, a test shall be conducted in the affected underground work area(s), at least at the beginning and midpoint of each shift, until the concentration of hydrogen sulfide has been less than 5 ppm for 3 consecutive days.

(i) Whenever hydrogen sulfide is detected in an amount exceeding 10 ppm, a continuous sampling and indicating hydrogen sulfide monitor shall be used to monitor the affected work area.

(ii) Employees shall be informed when a concentration of 10 ppm hydrogen sulfide is exceeded.

(iii) The continuous sampling and indicating hydrogen sulfide monitor shall be designed, installed, and maintained to provide a visual and aural alarm when the hydrogen sulfide concentration reaches 15 ppm to signal that additional measures, such as respirator use, increased ventilation, or evacuation, might be necessary to maintain hydrogen sulfide exposure below the permissible exposure limit.

(q) When the competent person determines, on the basis of air monitoring results or other information, that air contaminants may be present in sufficient quantity to be dangerous to life, the employer shall:

(i) Prominently post a notice at all entrances to the underground jobsite to inform all entrants of the hazardous condition; and

(ii) Immediately increase sampling frequency levels to insure workers are not exposed to identified contaminants in excess of the permissible exposure limit(s); and

(iii) Ensure that all necessary precautions are taken to comply with pertinent requirements of this section, and chapter 296-62 WAC.

(r) Whenever five percent or more of the lower explosive limit for methane or other flammable gases is detected in any underground work area(s) or in the air return, steps shall be taken to increase ventilation air volume or otherwise control the gas concentration, unless the employer is operating in accordance with the potentially gassy or gassy operation requirements. Such additional ventilation controls may be discontinued when gas concentrations are reduced below five percent of the lower explosive limit, but shall be reinstated whenever the five percent level is exceeded.

(s) Whenever 10 percent or more of the lower explosive limit for methane or other flammable gases is detected in the vicinity of welding, cutting, or other hot work, such work shall be suspended until the concentration of such flammable gas is reduced to less than 10 percent of the lower explosive limit.

(t) Whenever 20 percent or more of the lower explosive limit for methane or other flammable gases is detected in any underground work area(s) or in the air return:

(i) All employees, except those necessary to eliminate the hazard, shall be immediately withdrawn to a safe location above ground; and

(ii) Employees who remain underground to correct or eliminate the hazard described in (t) above shall be equipped

with approved, pressure demand mode, self-contained breathing apparatus, and shall have received adequate training in the proper use of that equipment.

(iii) Electrical power, except for acceptable pumping and ventilation equipment, shall be cut off to the area endangered by the flammable gas until the concentration of such gas is reduced to less than 20 percent of the lower explosive limit.

(14) Additional monitoring for potentially gassy and gassy operations. Operations which meet the criteria for potentially gassy and gassy operations set forth in subsection (13) of this section shall be subject to the additional monitoring requirements of this subsection.

(a) A test for oxygen content shall be conducted in the affected underground work areas and work areas immediately adjacent to such areas at least at the beginning and midpoint of each shift.

(b) When using rapid excavation machines, continuous automatic flammable gas monitoring equipment shall be used to monitor the air at the heading, on the rib, and in the return air duct. The continuous monitor shall signal the heading, and shut down electric power in the affected underground work area, except for acceptable pumping and ventilation equipment, when 20 percent or more of the lower explosive limit for methane or other flammable gases is encountered.

(i) A manual flammable gas monitor shall be used as needed, but at least at the beginning and midpoint of each shift, to ensure that the limits prescribed in subsections (11) and (13) of this section are not exceeded. In addition, a manual electrical shut down control shall be provided near the heading.

(ii) Local gas tests shall be made prior to and continuously during any welding, cutting, or other hot work.

(iii) In underground operations driven by drill-and-blast methods, the air in the affected area shall be tested for flammable gas prior to re-entry after blasting, and continuously when employees are working underground.

(c) Recordkeeping. A record of all air quality tests shall be maintained above ground at the worksite and be made available to the director or his/her representatives upon request. The record shall include the location, date, time, substance and amount monitored. Records of exposures to toxic substances shall be retained in accordance with Part B, chapter 296-62 WAC. All other air quality test records shall be retained until completion of the project.

(15) Ventilation.

(a)(i) Fresh air shall be supplied to all underground work areas in sufficient quantities to prevent dangerous or harmful accumulation of dust, fumes, mists, vapors, or gases.

(ii) Mechanical ventilation shall be provided in all underground work areas except when the employer can demonstrate that natural ventilation provides the necessary air quality through sufficient air volume and air flow.

(b) A minimum of 200 cubic feet (5.7 m³) of fresh air per minute shall be supplied for each employee underground.

(c) The linear velocity of air flow in the tunnel bore, in shafts, and in all other underground work areas shall be at least 30 feet (9.15 m) per minute where blasting or rock drilling is conducted, or where other conditions likely to produce dust, fumes, mists, vapors, or gases in harmful or explosive quantities are present.

(d) The direction of mechanical air flow shall be reversible.

(e) Air that has passed through underground oil or fuel-storage areas shall not be used to ventilate working areas.

(f) Following blasting, ventilation systems shall exhaust smoke and fumes to the outside atmosphere before work is resumed in affected areas.

(g) Ventilation doors shall be designed and installed so that they remain closed when in use, regardless of the direction of the air flow.

(h) When ventilation has been reduced to the extent that hazardous levels of methane or flammable gas may have accumulated, a competent person shall test all affected areas after ventilation has been restored and shall determine whether the atmosphere is within flammable limits before any power, other than for acceptable equipment, is restored or work is resumed.

(i) Whenever the ventilation system has been shut down with all employees out of the underground area, only competent persons authorized to test for air contaminants shall be allowed underground until the ventilation has been restored and all affected areas have been tested for air contaminants and declared safe.

(j) When drilling rock or concrete, appropriate dust control measures shall be taken to maintain dust levels within limits set in chapter 296-155 WAC, Part B-1. Such measures may include, but are not limited to, wet drilling, the use of vacuum collectors, and water mix spray systems.

(k)(i) Internal combustion engines, except diesel-powered engines on mobile equipment, are prohibited underground.

(ii) Mobile diesel-powered equipment used underground in atmospheres other than gassy operations shall be either approved by MSHA in accordance with the provisions of 30 CFR Part 32 (formerly Schedule 24), or shall be demonstrated by the employer to be fully equivalent to such MSHA-approved equipment, and shall be operated in accordance with that Part. (Each brake horsepower of a diesel engine requires at least 100 cubic feet (28.32 m3) of air per minute for suitable operation in addition to the air requirements for personnel. Some engines may require a greater amount of air to ensure that the allowable levels of carbon monoxide, nitric oxide, and nitrogen dioxide are not exceeded.)

(iii) Application shall be made to the mining/explosives section, department of labor and industries, for permission to use specified diesel equipment in a specified underground area and shall include the following:

(A) The type of construction and complete identification data and specifications including analysis of the undiluted exhaust gases of the diesel equipment.

(B) The location where the diesel equipment is to be used.

(C) Before the diesel equipment is taken underground, written permission shall be obtained from the department of labor and industries or its duly authorized representative. A satisfactory test on surface, to show that the exhaust gases do not exceed the maximum percentage of carbon monoxide permitted, shall be required.

(D) Diesel equipment shall only be used underground where the ventilation is controlled by mechanical means and

shall not be operated if the ventilating current is less than 100 CFM per horsepower based on the maximum brake horsepower of the engines.

(E) Air measurements shall be made at least once daily in the diesel engine working area and the measurements entered in the Underground Diesel Engine Record Book. Permissible maximum amounts of noxious gases are as follows:

At engine exhaust ports	Carbon Monoxide	.10%	1,000 ppm ³
Next to equipment	Carbon Monoxide	.0035%	35 ppm
General atmosphere	Carbon Monoxide	.0035%	35 ppm
General atmosphere	Nitrogen Dioxide	.0001%	1 ppm
General atmosphere	Aldehydes	.0002%	2 ppm

³ Parts of vapor or gas per million parts of contaminated air by volume at 25°C and 760 mm Hg. pressure.

(l) Potentially gassy or gassy operations shall have ventilation systems installed which shall:

(i) Be constructed of fire-resistant materials; and

(ii) Have acceptable electrical systems, including fan motors.

(m) Gassy operations shall be provided with controls located aboveground for reversing the air flow of ventilation systems.

(n) In potentially gassy or gassy operations, wherever mine-type ventilation systems using an offset main fan installed on the surface are used, they shall be equipped with explosion-doors or a weak-wall having an area at least equivalent to the cross-sectional area of the airway.

(16) Illumination.

(a) Sufficient lighting shall be provided, in accordance with the requirements of chapter 296-155 WAC, Part B-1, to permit safe operations at the face as well as in the general tunnel or shaft area and at the employees' workplace.

(b) Only acceptable portable lighting shall be used within 50 feet (15.24 m) of any underground heading during explosive handling.

(17) Fire prevention and control. Fire prevention and protection requirements applicable to underground construction operations are found in Part D of this chapter except as modified by the following additional standards.

(a) Open flames and fires are prohibited in all underground construction operations except as permitted for welding, cutting, and other hot work operations.

(i) Smoking may be allowed only in areas free of fire and explosion hazards.

(ii) Readily visible signs prohibiting smoking and open flames shall be posted in areas having fire or explosion hazards.

(iii) The carrying of matches, lighters, or other flame-producing smoking materials shall be prohibited in all underground operations where fire or explosion hazards exist.

(b) The employer may store underground no more than a 24-hour supply of diesel fuel for the underground equipment used at the worksite.

(c) The piping of diesel fuel from the surface to an underground location is permitted only if:

(i) Diesel fuel is contained at the surface in a tank whose maximum capacity is no more than the amount of fuel required to supply for a 24-hour period the equipment serviced by the underground fueling station; and

(ii) The surface tank is connected to the underground fueling station by an acceptable pipe or hose system that is controlled at the surface by a valve, and at the shaft bottom by a hose nozzle; and

(iii) The pipe is empty at all times except when transferring diesel fuel from the surface tank to a piece of equipment in use underground; and

(iv) Hoisting operations in the shaft are suspended during refueling operations if the supply piping in the shaft is not protected from damage.

(d)(i) Gasoline shall not be carried, stored, or used underground.

(ii) Acetylene, liquefied petroleum gas, and methylacetylene propadiene stabilized gas may be used underground only for welding, cutting and other hot work, and only in accordance with Part H of this chapter and subsections (13), (15), (17), and (18) of this section.

(e) Oil, grease, and diesel fuel stored underground shall be kept in tightly sealed containers in fire-resistant areas at least 300 feet (91.44 m) from underground explosive magazines, and at least 100 feet (30.48 m) from shaft stations and steeply inclined passageways. Storage areas shall be positioned or diked so that the contents of ruptured or overturned containers will not flow from the storage area.

(f) Flammable or combustible materials shall not be stored above ground within 100 feet (30.48 m) of any access opening to any underground operation. Where this is not feasible because of space limitations at the jobsite, such materials may be located within the 100-foot limit, provided that:

(i) They are located as far as practicable from the opening; and

(ii) Either a fire-resistant barrier of not less than one-hour rating is placed between the stored material and the opening, or additional precautions are taken which will protect the materials from ignition sources.

(g) Fire-resistant hydraulic fluids shall be used in hydraulically-actuated underground machinery and equipment unless such equipment is protected by a fire suppression system or by multipurpose fire extinguisher(s) rated at a sufficient capacity for the type and size of hydraulic equipment involved, but rated at least 4A:4OB:C.

(h)(i) Electrical installations in underground areas where oil, grease, or diesel fuel are stored shall be used only for lighting fixtures.

(ii) Lighting fixtures in storage areas, or within 25 feet (7.62 m) of underground areas where oil, grease, or diesel fuel are stored, shall be approved for Class I, Division 2 locations, in accordance with Part I of this chapter.

(i) Leaks and spills of flammable or combustible fluids shall be cleaned up immediately.

(j) A fire extinguisher of at least 4A:4OB:C rating or other equivalent extinguishing means shall be provided at the head pulley and at the tail pulley of underground belt conveyors, and at 300-foot intervals along the belt.

(k) Any structure located underground or within 100 feet (30.48 m) of an opening to the underground shall be constructed of material having a fire-resistance rating of at least one hour.

(18) Welding, cutting, and other hot work. In addition to the requirements of Part H of this chapter, the following

requirements shall apply to underground welding, cutting, and other hot work.

(a) No more than the amount of fuel gas and oxygen cylinders necessary to perform welding, cutting, or other hot work during the next 24-hour period shall be permitted underground.

(b) Noncombustible barriers shall be installed below welding, cutting, or other hot work being done in or over a shaft or raise.

(19) Ground support.

(a) In tunnels (other than hard rock) timber sets, steel rings, steel frames, concrete liners, or other engineered tunnel support systems shall be used. Every tunnel support system shall be designed by a licensed professional engineer. Design specifications shall be available at the worksite.

(b) Portal areas. Portal openings and access areas shall be guarded by shoring, fencing, head walls, shotcreting, or other equivalent protection to ensure safe access of employees and equipment. Adjacent areas shall be scaled or otherwise secured to prevent loose soil, rock, or fractured materials from endangering the portal and access area.

(c) Subsidence areas. The employer shall ensure ground stability in hazardous subsidence areas by shoring, by filling in, or by erecting barricades and posting warning signs to prevent entry.

(d) Underground areas.

(i)(A) A competent person shall inspect the roof, face, and walls of the work area at the start of each shift and as often as necessary to determine ground stability.

(B) Competent persons conducting such inspections shall be protected from loose ground by location, ground support, or equivalent means.

(ii) Ground conditions along haulageways and travelways shall be inspected as frequently as necessary to ensure safe passage.

(iii) Loose ground that might be hazardous to employees shall be taken down, scaled, or supported.

(iv) Torque wrenches shall be used wherever bolts that depend on torsionally applied force are used for ground support.

(v) A competent person shall determine whether rock bolts meet the necessary torque, and shall determine the testing frequency in light of the bolt system, ground conditions, and the distance from vibration sources.

(vi) Suitable protection shall be provided for employees exposed to the hazard of loose ground while installing ground support systems.

(vii) Support sets shall be installed so that the bottoms have sufficient anchorage to prevent ground pressures from dislodging the support base of the sets. Lateral bracing (collar bracing, tie rods, or spreaders) shall be provided between immediately adjacent sets to ensure added stability.

(viii) Damaged or dislodged ground supports that create a hazardous condition shall be promptly repaired or replaced. When replacing supports, the new supports shall be installed before the damaged supports are removed.

(ix) A shield or other type of support shall be used to maintain a safe travelway for employees working in dead-end areas ahead of any support replacement operation.

(e) Shafts.

(i) Shafts and wells over 4 feet (1.219 m) in depth that employees must enter shall be supported by a steel casing, concrete pipe, timber, solid rock, or other suitable material.

(ii)(A) The full depth of the shaft shall be supported by casing or bracing except where the shaft penetrates into solid rock having characteristics that will not change as a result of exposure. Where the shaft passes through earth into solid rock, or through solid rock into earth, and where there is potential for shear, the casing or bracing shall extend at least 5 feet (1.53 m) into the solid rock. When the shaft terminates in solid rock, the casing or bracing shall extend to the end of the shaft or 5 feet (1.53 m) into the solid rock, whichever is less.

(B) The casing or bracing shall extend 42 inches (1.07 m) plus or minus 3 inches (8 cm) above ground level, except that the minimum casing height may be reduced to 12 inches (0.3 m), provided that a standard railing is installed; that the ground adjacent to the top of the shaft is sloped away from the shaft collar to prevent entry of liquids; and that effective barriers are used to prevent mobile equipment operating near the shaft from jumping over the 12-inch (0.3 m) barrier.

(iii) After blasting operations in shafts, a competent person shall determine if the walls, ladders, timbers, blocking, or wedges have loosened. If so, necessary repairs shall be made before employees other than those assigned to make the repairs are allowed in or below the affected areas.

(f) Blasting. This subsection applies in addition to the requirements for blasting and explosives operations, including handling of misfires, which are found in chapter 296-52 WAC.

(i) Blasting wires shall be kept clear of electrical lines, pipes, rails, and other conductive material, excluding earth, to prevent explosives initiation or employee exposure to electric current.

(ii) Following blasting, an employee shall not enter a work area until the air quality meets the requirements of subsection (13) of this section.

(g) Drilling.

(i) A competent person shall inspect all drilling and associated equipment prior to each use. Equipment defects affecting safety shall be corrected before the equipment is used.

(ii) The drilling area shall be inspected for hazards before the drilling operation is started.

(iii) Employees shall not be allowed on a drill mast while the drill bit is in operation or the drill machine is being moved.

(iv) When a drill machine is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast shall be placed in a safe position.

(v) Receptacles or racks shall be provided for storing drill steel located on jumbos.

(vi) Employees working below jumbo decks shall be warned whenever drilling is about to begin.

(vii) Drills on columns shall be anchored firmly before starting drilling, and shall be retightened as necessary thereafter.

(viii) The employer shall provide mechanical means on the top deck of a jumbo for lifting unwieldy or heavy material.

(ix) When jumbo decks are over 10 feet (3.05 m) in height, the employer shall install stairs wide enough for two persons.

(x) Jumbo decks more than 10 feet (3.05 m) in height shall be equipped with guardrails on all open sides, excluding access openings of platforms, unless an adjacent surface provides equivalent fall protection.

(xi) Only employees assisting the operator shall be allowed to ride on jumbos, unless the jumbo meets the requirements of subsection (20)(e) of this section.

(xii) Jumbos shall be chocked to prevent movement while employees are working on them.

(xiii) Walking and working surfaces of jumbos shall be maintained to prevent the hazards of slipping, tripping, and falling.

(xiv) Jumbo decks and stair treads shall be designed to be slip-resistant and secured to prevent accidental displacement.

(xv) Scaling bars shall be available at scaling operations and shall be maintained in good condition at all times. Blunted or severely worn bars shall not be used.

(xvi) Before commencing the drill cycle, the face and lifters shall be examined for misfires (residual explosives) and, if found, they shall be removed before drilling commences at the face. Blasting holes shall not be drilled through blasted rock (muck) or water.

(xvii) Employees in a shaft shall be protected either by location or by suitable barrier(s) if powered mechanical loading equipment is used to remove muck containing unfired explosives.

(xviii) A caution sign reading "buried line," or similar wording shall be posted where air lines are buried or otherwise hidden by water or debris.

(20) Haulage.

(a) A competent person shall inspect haulage equipment before each shift.

(i) Equipment defects affecting safety and health shall be corrected before the equipment is used.

(ii) Powered mobile haulage equipment shall be provided with adequate brakes.

(iii) Power mobile haulage equipment, including trains, shall have audible warning devices to warn employees to stay clear. The operator shall sound the warning device before moving the equipment and whenever necessary during travel.

(iv) The operator shall assure that lights which are visible to employees at both ends of any mobile equipment, including a train, are turned on whenever the equipment is operating.

(v) In those cabs where glazing is used, the glass shall be safety glass, or its equivalent, and shall be maintained and cleaned so that vision is not obstructed.

(b) Antirollback devices or brakes shall be installed on inclined conveyor drive units to prevent conveyors from inadvertently running in reverse. Employees shall not be permitted to ride a power-driven chain, belt, or bucket conveyor unless the conveyor is specifically designed for the transportation of persons.

(c) Endless belt-type manlifts are prohibited in underground construction.

(d) General requirements also applicable to underground construction for use of conveyors in construction are found in chapter 296-155 WAC, Part L.

(e) No employee shall ride haulage equipment unless it is equipped with seating for each passenger and protects passengers from being struck, crushed, or caught between other equipment or surfaces. Members of train crews may ride on a locomotive if it is equipped with handholds and nonslip steps or footboards. Requirements applicable to underground construction for motor vehicle transportation of employees are found in chapter 296-155 WAC, Part M.

(f) Conveyor lockout.

(i) Conveyors shall be de-energized and locked out with a padlock, and tagged out with a "Do Not Operate" tag at any time repair, maintenance, or clean-up work is being performed on the conveyor.

(ii) Tags or push button stops are not acceptable.

(iii) Persons shall not be allowed to walk on conveyors except for emergency purposes and then only after the conveyor has been deenergized and locked out in accordance with (f) above, and persons can do so safely.

(g) Powered mobile haulage equipment, including trains, shall not be left unattended unless the master switch or motor is turned off; operating controls are in neutral or park position; and the brakes are set, or equivalent precautions are taken to prevent rolling.

(h) Whenever rails serve as a return for a trolley circuit, both rails shall be bonded at every joint and crossbonded every 200 feet (60.96 m).

(i) When dumping cars by hand, the car dumps shall have tiedown chains, bumper blocks, or other locking or holding devices to prevent the cars from overturning.

(j) Rocker-bottom or bottom-dump cars shall be equipped with positive locking devices to prevent unintended dumping.

(k) Equipment to be hauled shall be loaded and secured to prevent sliding or dislodgement.

(l)(i) Mobile equipment, including rail-mounted equipment, shall be stopped for manual connecting or service work, and;

(ii) Employees shall not reach between moving cars during coupling operations.

(iii) Couplings shall not be aligned, shifted, or cleaned on moving cars or locomotives.

(iv) Safety chains or other connections shall be used in addition to couplers to connect person cars or powder cars whenever the locomotive is uphill of the cars.

(v) When the grade exceeds one percent and there is a potential for runaway cars, safety chains or other connections shall be used in addition to couplers to connect haulage cars or, as an alternative, the locomotive must be downhill of the train.

(vi) Such safety chains or other connections shall be capable of maintaining connection between cars in the event of either coupler disconnect, failure or breakage.

(m) Parked rail equipment shall be chocked, blocked, or have brakes set to prevent inadvertent movement.

(n) Berms, bumper blocks, safety hooks, or equivalent means shall be provided to prevent overtravel and overturning of haulage equipment at dumping locations.

(o) Bumper blocks or equivalent stopping devices shall be provided at all track dead ends.

(p)(i) Only small handtools, lunch pails, or similar small items may be transported with employees in person cars, or on top of a locomotive.

(ii) When small hand tools or other small items are carried on top of a locomotive, the top shall be designed or modified to retain them while traveling.

(q)(i) Where switching facilities are available, occupied personnel cars shall be pulled, not pushed. If personnel cars must be pushed and visibility of the track ahead is hampered, then a qualified person shall be stationed in the lead car to give signals to the locomotive operator.

(ii) Crew trips shall consist of personnel loads only.

(21) Electrical safety. This subsection applies in addition to the general requirements for electrical safety which are found in Part I of this chapter.

(a) Electric power lines shall be insulated or located away from water lines, telephone lines, air lines, or other conductive materials so that a damaged circuit will not energize the other systems.

(b) Lighting circuits shall be located so that movement of personnel or equipment will not damage the circuits or disrupt service.

(c) Oil-filled transformers shall not be used underground unless they are located in a fire-resistant enclosure suitably vented to the outside and surrounded by a dike to retain the contents of the transformers in the event of rupture.

(22) Hoisting unique to underground construction except as modified by this section, the following provisions of chapter 296-155 WAC, Part L apply: Requirements for cranes are found in WAC 296-155-525. WAC 296-155-528 contains rules applicable to crane hoisting of personnel, except, that the limitations imposed by WAC 296-155-528(2) do not apply to the routine access of employees to the underground via a shaft. Requirements for personnel hoists, material hoists, and elevators are found in WAC 296-155-530 and in this subsection.

(a) General requirements for cranes and hoists.

(i) Materials, tools, and supplies being raised or lowered, whether within a cage or otherwise, shall be secured or stacked in a manner to prevent the load from shifting, snagging, or falling into the shaft.

(ii) A warning light suitably located to warn employees at the shaft bottom and subsurface shaft entrances shall flash whenever a load is above the shaft bottom or subsurface entrances, or the load is being moved in the shaft. This subsection does not apply to fully enclosed hoistways.

(iii) Whenever a hoistway is not fully enclosed and employees are at the shaft bottom, conveyances or equipment shall be stopped at least 15 feet (4.57 m) above the bottom of the shaft and held there until the signalperson at the bottom of the shaft directs the operator to continue lowering the load, except that the load may be lowered without stopping if the load or conveyance is within full view of a bottom signalperson who is in constant voice communication with the operator.

(iv)(A) Before maintenance, repairs, or other work is commenced in the shaft served by a cage, skip, or bucket, the

operator and other employees in the area shall be informed and given suitable instructions.

(B) A sign warning that work is being done in the shaft shall be installed at the shaft collar, at the operator's station, and at each underground landing.

(v) Any connection between the hoisting rope and the cage or skip shall be compatible with the type of wire rope used for hoisting.

(vi) Spin-type connections, where used, shall be maintained in a clean condition and protected from foreign matter that could affect their operation.

(vii) Cage, skip, and load connections to the hoist rope shall be made so that the force of the hoist pull, vibration, misalignment, release of lift force, or impact will not disengage the connection. Only closed shackles shall be used for cage and skip rigging.

(viii) When using wire rope wedge sockets, means shall be provided to prevent wedge escapement and to ensure that the wedge is properly seated.

(b) Additional requirements for cranes. Cranes shall be equipped with a limit switch to prevent overtravel at the boom tip. Limit switches are to be used only to limit travel of loads when operational controls malfunction and shall not be used as a substitute for other operational controls.

(c) Additional requirements for hoists.

(i) Hoists shall be designed so that the load hoist drum is powered in both directions of rotation, and so that brakes are automatically applied upon power release or failure.

(ii) Control levers shall be of the "deadman type" which return automatically to their center (neutral) position upon release.

(iii) When a hoist is used for both personnel hoisting and material hoisting, load and speed ratings for personnel and for materials shall be assigned to the equipment.

(iv) Hoist machines with cast metal parts shall not be used.

(v) Material hoisting may be performed at speeds higher than the rated speed for personnel hoisting if the hoist and components have been designed for such higher speeds and if shaft conditions permit.

(vi) Employees shall not ride on top of any cage, skip, or bucket except when necessary to perform inspection or maintenance of the hoisting system, in which case they shall be protected by a body belt/harness system to prevent falling.

(vii) Personnel and materials (other than small tools and supplies secured in a manner that will not create a hazard to employees) shall not be hoisted together in the same conveyance. However, if the operator is protected from the shifting of materials, then the operator may ride with materials in cages or skips which are designed to be controlled by an operator within the cage or skip.

(viii) Line speed shall not exceed the design limitations of the systems.

(ix) Hoists shall be equipped with landing level indicators at the operator's station. Marking of the hoist rope does not satisfy this requirement.

(x) Whenever glazing is used in the hoist house, it shall be safety glass, or its equivalent, and be free of distortions and obstructions.

(xi) A fire extinguisher that is rated at least 2A:10B:C (multipurpose, dry chemical) shall be mounted in each hoist house.

(xii) Hoist controls shall be arranged so that the operator can perform all operating cycle functions and reach the emergency power cutoff without having to reach beyond the operator's normal operating position.

(xiii) Hoists shall be equipped with limit switches to prevent overtravel at the top and bottom of the hoistway.

(xiv) Limit switches are to be used only to limit travel of loads when operational controls malfunction and shall not be used as a substitute for other operational controls.

(xv) Hoist operators shall be provided with a closed-circuit voice communication system to each landing station, with speaker-microphones so located that the operator can communicate with individual landing stations during hoist use.

(xvi) When sinking shafts 75 feet (22.86 m) or less in depth, cages, skips, and buckets that may swing, bump, or snag against shaft sides or other structural protrusions shall be guided by fenders, rails, ropes, or a combination of those means.

(xvii) When sinking shafts more than 75 feet (22.86 m) in depth, all cages, skips, and buckets shall be rope or rail-guided to within a rail length from the sinking operation.

(xviii) Cages, skips, and buckets in all completed shafts, or in all shafts being used as completed shafts, shall be rope or rail-guided for the full length of their travel.

(xix) Wire rope used in load lines of material hoists shall be capable of supporting, without failure, at least five times the maximum intended load or the factor recommended by the rope manufacturer, whichever is greater. Refer to chapter 296-155 WAC, Part L, for design factors for wire rope used in personnel hoists. The design factors shall be calculated by dividing the breaking strength of wire rope, as reported in the manufacturer's rating tables, by the total static load, including the weight of the wire rope in the shaft when fully extended.

(xx) A competent person shall visually check all hoisting machinery, equipment, anchorages, and hoisting rope at the beginning of each shift and during hoist use, as necessary.

(xxi) Each safety device shall be checked by a competent person at least weekly during hoist use to ensure suitable operation and safe condition.

(xxii) In order to ensure suitable operation and safe condition of all functions and safety devices, each hoist assembly shall be inspected and load-tested to 100 percent of its rated capacity: At the time of installation; after any repairs or alterations affecting its structural integrity; after the operation of any safety device; and annually when in use. The employer shall prepare a certification record which includes the date each inspection and load-test was performed; the signature of the person who performed the inspection and test; and a serial number or other identifier for the hoist that was inspected and tested. The most recent certification record shall be maintained on file until completion of the project.

(xxiii) Before hoisting personnel or material, the operator shall perform a test run of any cage or skip whenever it has been out of service for one complete shift, and whenever the assembly or components have been repaired or adjusted.

(xiv) Unsafe conditions shall be corrected before using the equipment.

(d) Additional requirements for personnel hoists.

(i) Hoist drum systems shall be equipped with at least two means of stopping the load, each of which shall be capable of stopping and holding 150 percent of the hoist's rated line pull. A broken-rope safety, safety catch, or arrestment device is not a permissible means of stopping under this subsection.

(ii) The operator shall remain within sight and sound of the signals at the operator's station.

(iii) All sides of personnel cages shall be enclosed by one-half inch (12.70 mm) wire mesh (not less than No. 14 gauge or equivalent) to a height of not less than 6 feet (1.83 m). However, when the cage or skip is being used as a work platform, its sides may be reduced in height to 42 inches (1.07 m) when the conveyance is not in motion.

(iv) All personnel cages shall be provided with a positive locking door that does not open outward.

(v) All personnel cages shall be provided with a protective canopy. The canopy shall be made of steel plate, at least 3/16 -inch (4.763 mm) in thickness, or material of equivalent strength and impact resistance. The canopy shall be sloped to the outside, and so designed that a section may be readily pushed upward to afford emergency egress. The canopy shall cover the top in such a manner as to protect those inside from objects falling in the shaft.

(vi) Personnel platforms operating on guide rails or guide ropes shall be equipped with broken-rope safety devices, safety catches, or arrestment devices that will stop and hold 150 percent of the weight of the personnel platform and its maximum rated load.

(vii) During sinking operations in shafts where guides and safeties are not yet used, the travel speed of the personnel platform shall not exceed 200 feet (60.96 m) per minute. Governor controls set for 200 feet (60.96 m) per minute shall be installed in the control system and shall be used during personnel hoisting.

(viii) The personnel platform may travel over the controlled length of the hoistway at rated speeds up to 600 feet (182.88 m) per minute during sinking operations in shafts where guides and safeties are used.

(ix) The personnel platform may travel at rated speeds greater than 600 feet (182.88 m) per minute in complete shafts.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-155-730, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-05-046, § 296-155-730, filed 2/13/98, effective 4/15/98. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-155-730, filed 1/18/95, effective 3/1/95; 94-15-096 (Order 94-07), § 296-155-730, filed 7/20/94, effective 9/20/94; 91-11-070 (Order 91-01), § 296-155-730, filed 5/20/91, effective 6/20/91; 90-03-029 (Order 89-20), § 296-155-730, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-730, filed 1/21/86; Order 76-29, § 296-155-730, filed 9/30/76; Order 74-26, § 296-155-730, filed 5/7/74, effective 6/6/74.]

Chapter 296-200A WAC

CONTRACTOR CERTIFICATE OF REGISTRATION RENEWALS—SECURITY—INSURANCE

WAC

296-200A-900 What fees does the department charge contractors for issuance, renewal and reinstatement of certificates of registration?

WAC 296-200A-900 What fees does the department charge contractors for issuance, renewal and reinstatement of certificates of registration? (1) For the purposes of this chapter:

(a) A contractor's registration is **renewed** before it expires.

(b) A contractor's registration is **reinstated** after the registration:

(i) Has expired; or

(ii) Has been suspended because the contractor's insurance has expired; or

(iii) Has been suspended because the contractor's bond has been canceled or impaired.

(c) A contractor **reregisters** when his or her business structure changes.

(2) The department charges the following fees:

(a) \$45.00 for each issuance, renewal or reregistration of a certificate of registration.

(b) \$45.00 for the reinstatement of a certificate of registration.

(c) \$10.75 for providing a duplicate certificate of registration.

(d) \$21.50 for each requested certified letter prepared by the department.

(e) \$2.00 per copy for documents copied from a contractor's file. The maximum copy charge for copies from one contractor's file will be \$25.00.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-200A-900, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-200A-900, filed 5/29/98, effective 6/30/98. Statutory Authority: Chapter 18.27 RCW. 97-24-071, § 296-200A-900, filed 12/2/97, effective 1/5/98.]

Chapter 296-301 WAC

SAFETY STANDARDS FOR THE TEXTILE INDUSTRY

WAC

296-301-020	General safety requirements.
296-301-170	Clothing folding machine.
296-301-195	Open tanks and vats for mixing and storage of hot or corrosive liquids.
296-301-215	First aid.
296-301-220	Personal protective equipment.

WAC 296-301-020 General safety requirements. (1) Means of stopping machines. Every textile machine shall be provided with individual mechanical or electrical means for stopping such machines. On machines driven by belts and shafting a locking-type shifter or an equivalent positive device shall be used. On operations where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power.

(2) **Handles.** Stopping and starting handles shall be designed to the proper length to prevent the worker's hand or fingers from striking against any revolving part, gear guard, or any other part of the machine.

(3) **Machine guarding.** An employer must ensure that power transmission parts are guarded according to the requirements of WAC 296-24-205 through 296-24-20527.

(4) **Housekeeping.** Aisles and working spaces shall be kept in good order in accordance with requirements of WAC 296-24-735 through 296-24-73505.

(5) **Inspection and maintenance.** All guards and other safety devices, including starting and stopping devices, shall be properly maintained.

(6) **Lighting and illumination.** Lighting and illumination shall conform to the general occupational health standards, chapter 296-62 WAC.

(7) **Identification of piping systems.** Identification of piping systems shall conform to American National Standard A13.1-1956.

(8) **Identification of physical hazards.** Identification of physical hazards shall be in accordance with the requirements of WAC 296-24-135 through 296-24-13503, of the general safety and health standards.

(9) **Steam pipes.** All pipes carrying steam or hot water for process or servicing machinery, when exposed to contact and located within seven feet of the floor or working platform shall be covered with a heat-insulating material, or guarded with equivalent protection.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094 and 99-22-093, § 296-301-020, filed 8/17/99 and 11/2/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-301-020, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 74-19, § 296-301-020, filed 5/6/74.]

WAC 296-301-170 Clothing folding machine. Clothing folding machines shall meet the requirements of WAC 296-24-195 through 296-24-19513.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-301-170, filed 8/17/99, effective 12/1/99; Order 74-19, § 296-301-170, filed 5/6/74.]

WAC 296-301-195 Open tanks and vats for mixing and storage of hot or corrosive liquids. (1) Guardrails shall be provided for open tanks and vats which conform to the requirements of WAC 296-24-750 through 296-24-75011.

(2) **Shutoff valves.** Boiling tanks, caustic tanks, and hot liquid containers, so located that the operator cannot see the contents from the floor or working area, shall have emergency shutoff valves controlled from a point not subject to danger of splash. Valves shall conform to the ASME Pressure Vessel Code, section VIII, Unfired Pressure Vessels, 1968.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-301-195, filed 8/17/99, effective 12/1/99; Order 74-19, § 296-301-195, filed 5/6/74.]

WAC 296-301-215 First aid. The first-aid provisions of chapter 296-24 WAC, Part A-1 of the general safety and health standards, apply within the scope of chapter 296-301 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-301-215, filed 12/7/99, effective 2/1/00; Order 74-19, § 296-301-215, filed 5/6/74.]

WAC 296-301-220 Personal protective equipment.

(1) **Personal protective equipment.** Workers engaged in handling acids or caustics in bulk, repairing pipe lines containing acids or caustics, etc., shall be provided with personal protective equipment to conform to the requirements of WAC 296-24-07501 and 296-24-07801.

(2) **Respiratory protection.** Employers must provide respiratory protection as required in chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-301-220, filed 8/17/99, effective 12/1/99; Order 74-19, § 296-301-220, filed 5/6/74.]

Chapter 296-304 WAC

SAFETY STANDARDS FOR SHIP REPAIRING, SHIPBUILDING AND SHIPBREAKING

WAC

296-304-03005 Mechanical paint removers.

WAC 296-304-03005 Mechanical paint removers. (1)

Power tools.

(a) The employer must ensure that employees engaged in the removal of paints, preservatives, rusts or other coatings by means of power tools are protected against eye injury by goggles or face shields that meets the requirements of WAC 296-304-09005 (1) and (2).

(b) All portable rotating tools used for the removal of paints, preservatives, rusts or other coatings shall be adequately guarded to protect both the operator and nearby workers from flying missiles.

(c) Portable electric tools shall be grounded in accordance with the requirements of WAC 296-304-08003 (1) and (2).

(d) In a confined space, the employer must provide mechanical exhaust ventilation sufficient to keep the dust concentration to a minimum, or must protect employees by respiratory protective equipment that meets the requirements of chapter 296-62 WAC, Part E.

(2) **Flame removal.**

(a) The employer must ensure that when hardened preservative coatings are removed by flame in enclosed spaces, the employees exposed to fumes are protected by air line respirators that meet the requirements of chapter 296-62 WAC, Part E. Employees performing this operation in the open air, and those exposed to the resulting fumes, must be protected by a fume filter respirator that meets the requirements of WAC 296-62-071.

(b) Flame or heat shall not be used to remove soft and greasy preservative coatings.

(3) **Abrasive blasting.**

(a) **Equipment.** Hoses and fittings used for abrasive blasting shall meet the following requirements:

(i) **Hoses.** Hose of a type to prevent shocks from static electricity shall be used.

(ii) Hose couplings. Hose lengths shall be joined by metal couplings secured to the outside of the hose to avoid erosion and weakening of the couplings.

(iii) Nozzles. Nozzles shall be attached to the hose by fittings that will prevent the nozzle from unintentionally becoming disengaged. Nozzle attachments shall be of metal and shall fit onto the hose externally.

(iv) Dead man control. A dead man control device shall be provided at the nozzle end of the blasting hose either to provide direct cutoff or to signal the pot tender by means of a visual and audible signal to cut off the flow, in the event the blaster loses control of the hose. The pot tender shall be available at all times to respond immediately to the signal.

(b) Replacement. Hoses and all fittings used for abrasive blasting shall be inspected frequently to insure timely replacement before an unsafe amount of wear has occurred.

(c) Personal protective equipment.

(i) The employer must ensure that abrasive blasters working in enclosed spaces are protected by abrasive blasting respirators that meet the requirements of WAC 296-24-675 and chapter 296-62 WAC, Part E.

(ii) The employer must ensure that abrasive blasters working in the open are protected as required in subsection (1) of this section.

Exception: When synthetic abrasives containing less than one percent free silica are used, the employer may substitute particulate or dust filter respirators that are approved by the National Institute of Safety and Health (NIOSH) and used according to WAC 296-62-071.

(iii) The employer must ensure that employees, including machine tenders and abrasive recovery workers, working in areas where unsafe concentrations of abrasive materials and dusts are present are protected by eye and respiratory protective equipment that meets the requirements of WAC 296-304-09005 (1) and (2) and chapter 296-62 WAC, Part E.

Exception: This requirement does not apply to blasters.

(iv) The employer must ensure that a blaster is protected against injury from exposure to the blast by appropriate protective clothing, including gloves that meet the requirements of WAC 296-304-09015(1).

(v) A surge from a drop in pressure in the hose line can throw a blaster off the staging. To protect against this hazard, the employer must ensure that a blaster is protected by a personal fall arrest system, that meets the requirements of WAC 296-304-09021. The personal fall arrest system must be tied off to the ship or other structure during blasting from elevations where adequate fall protection cannot be provided by railings.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-304-03005, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-304-03005, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-304-03005, filed 1/18/95, effective 3/10/95; 93-19-142 (Order 93-04), § 296-304-03005, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-03005, filed 3/1/76; Order 74-25, § 296-304-03005, filed 5/7/74.]

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Chapter 296-305 WAC

SAFETY STANDARDS FOR FIRE FIGHTERS

WAC

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WAC 296-305-01003 Scope and application. (1) The rules of this chapter shall apply with respect to any and all activities, operations and equipment of employers and employees involved in providing fire protection services which are subject to the provisions of the Washington Industrial Safety and Health Act of 1973 (chapter 49.17 RCW).

(2) The provisions of this chapter apply to all fire fighters and their work places, including the fire combat scene. Although enforcement of applicable standards will result from provable violations of these standards at the fire combat scene, agents of the department will not act in any manner that will reduce or interfere with the effectiveness of the emergency response of a fire fighting unit. Activities directly related to the combating of a fire will not be subjected to the immediate restraint provisions of RCW 49.17.130.

(3) In the development of this document many consensus standards of the industry were considered and evaluated as to adaptability to the Washington state fire service industry. Where adaptable and meaningful, the fire fighter safety elements of these standards were incorporated into this WAC. Chapter 296-305 WAC, shall be considered as the fire fighter safety standards for the state of Washington.

(4) The provisions of this chapter cover existing requirements that apply to all fire departments. All fire departments shall have in place their own policy statement and operating instructions that meet or exceed these requirements. This chapter contains state and/or federal performance criteria that fire departments shall meet.

(5) Unless specifically stated otherwise by rule, if a duplication of regulations, or a conflict exists between the rules regulating wildland fire fighting and other rules in the chapter, only the rules regulating wildland fire fighting shall apply to wildland fire fighting activities and equipment.

(6) The provisions of this chapter shall be supplemented by the provisions of the general safety and health standards of the department of labor and industries, chapters 296-24 (including Part G-2, Fire protection) and 296-62 WAC. In the event of conflict between any provision(s) of this chapter and any provision(s) of the general safety and health standards, the provision(s) of this chapter shall apply.

(7) The provisions of this standard do not apply to industrial fire brigades, as defined in this chapter. Industrial fire

brigades are covered under the provisions of chapter 296-24 WAC, Part G-2, Fire protection.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-01003, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-01003, filed 5/10/96, effective 1/1/97.]

WAC 296-305-01005 Definitions. Unless the context indicates otherwise, words used in this chapter shall have the meaning given in this section.

Accident: An unexpected event that interrupts or interferes with the orderly progress of the fire department operations and may or may not include personal injury or property damage.

Accountability system: A system of fire fighter accountability that provides for the tracking and inventory of all members.

ACGIH: American Conference of Governmental Industrial Hygienists.

Aerial ladder: A ladder mounted on top of an apparatus, hydraulic or pneumatic controlled.

Aerial tower: Telescopic elevating platform or water tower assembly usually with a ladder on top of the section.

Aerial platform: A device consisting of two or more booms or sections with a passenger carrying platform assembly.

ANSI: American National Standards Institute.

Apparatus: A mobile piece of fire equipment such as a pumper, aerial, tender, automobile, etc.

Approved:

(1) A method, equipment, procedure, practice, tool, etc., which is sanctioned, consented to, confirmed or accepted as good or satisfactory for a particular purpose or use by a person, or organization authorized to make such a judgment.

(2) Means approved by the director of the department of labor and industries or his/her authorized representative: Provided, however, That should a provision of this chapter state that approval by an agency or organization other than the department of labor and industries is required, such as Underwriters' Laboratories or the Bureau of Mines, the provisions of chapter 296-24 WAC, Part A-1, shall apply.

Audiogram: A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

Authorized person: A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the job site.

Beacon: A flashing or rotating light.

Bloodborne pathogens: Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Blowup (wildfire): Sudden increase in fire intensity or rate of spread sufficient to preclude direct control or to upset existing control plans. Often accompanied by violent convection and may have other characteristics of a fire storm.

Chemical-protective clothing: Items made from chemical-resistive materials, such as clothing, hood, boots, and

gloves, that are designed and configured to protect the wearer's torso, head, arms, legs, hands, and feet from hazardous materials. Chemical-protective clothing (garments) can be constructed as a single, or multi-piece, garment. The garment may completely enclose the wearer either by itself or in combination with the wearer's respiratory protection, attached or detachable hood, gloves, and boots.

Chief: The employer representative highest in rank who is responsible for the fire department's operation.

Combat scene: The site where the suppression of a fire or emergency exists.

Confinement: Those procedures taken to keep a material in a defined or local area.

Confined space: Means a space that:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and

(3) Is not designed for continuous employee occupancy.

Containment: The actions taken to keep a material in its container (e.g. stop the release of the material or reduce the amount being released.)

Contaminated: The presence or the reasonably anticipated presence of nuisance materials foreign to the normal atmospheres, blood, hazardous waste, or other potentially infectious materials on an item or surface.

Contaminated laundry: Laundry which has been soiled with blood or other potentially infectious materials or may contain contaminated sharps.

Contamination: The process of transferring a hazardous material from its source to people, animals, the environment, or equipment, which may act as a carrier.

dba: A measure of noise level expressed as decibels measured on the "A" scale.

Deck pipe: A permanently mounted device which delivers a large stream of water.

Decontamination:

(1) The physical or chemical process of reducing and preventing the spread of contamination from persons or equipment used at a hazardous materials incident.

(2) The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Department: Department of labor and industries.

Director of fire department: The chief or principle administrator of the fire department.

Director: The director of the department of labor and industries, or his/her designated representative.

Disinfection: A procedure which inactivates virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms (example: bacterial endospores) on inanimate objects.

Drill tower: A structure which may or may not be attached to the station and which is principally used for training fire fighters in fire service techniques.

Driver: A person having satisfactorily completed the fire department's "requirements of driver" of a specific piece of fire apparatus.

Emergency: A sudden and unexpected event calling for immediate action.

Emergency incident: A specific emergency operation.

Emergency medical care: The provision of treatment to, and/or transportation of, patients which may include first-aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other medical procedures that occur prior to arrival at a hospital or other health care facility.

Emergency operations: Activities of the fire department relating to rescue, fire suppression, emergency medical care, and special operations, including response to the scene of an incident and all functions performed at the scene.

Employee: An employee of an employer who is employed in the business of his/her employer whether by way of manual labor or otherwise and every person in this state who is engaged in the employment of or who is working under an independent contract the essence of which is their personal labor for an employer under this chapter whether by way of manual labor or otherwise. Also see "Member."

Employer: Any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees or who contracts with one or more persons, the essence of which is the personal labor of such person or persons and includes the state, counties, cities, and all municipal corporations, public corporations, political subdivisions of the state, and charitable organizations.

Employer representative: A fire department officer authorized by the chief or director of the fire department to act in his/her behalf.

Engine (pumper): A piece of apparatus equipped with hose and a pump for the purpose of supplying water under pressure through hose lines.

Engineering control: Any procedure other than an administrative control that reduces exposures by modifying the source or reducing the exposure to an individual. Examples of engineering controls include the use of isolation, containment, encapsulation, sound absorbing materials for noise control, and ventilation.

Explosion proof equipment: Equipment enclosed in a case that is capable of withstanding an explosion or a specified gas or vapor which may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and which operates at such an external temperature that it will not ignite a surrounding flammable atmosphere.

Fastest means available: The (nearest-closest) telephone, portable radio, mobile radio, telephone/radio dispatcher or any other mode of mechanical communication.

Fire apparatus: A fire department emergency vehicle used for rescue, fire suppression, or other specialized functions.

Fire boat: A fire department watercraft having a permanent, affixed fire fighting capability.

Fire combat training: Training received by fire fighters on the drill ground, drill tower, or industrial site to maintain the fire fighter's proficiency.

Fire department: An organization providing any or all of the following: Rescue, fire suppression, and other related activities. For the purposes of this standard the term "Fire Department" shall include any public, private, or military organization engaging in this type of activity.

Fire department facility: Any building or area owned, operated, occupied, or used by a fire department on a routine basis. This does not include locations where a fire department may be summoned to perform emergency operations or other duties, unless such premises are normally under the control of the fire department.

Fire department safety officer: The member of the fire department assigned and authorized as the principal safety officer to perform the duties and responsibilities specified in this standard.

Fire fighter: A member of a fire department whose duties require the performance of essential fire fighting functions or substantially similar functions.

Fire retardant: Any material used to reduce, stop or prevent the flame spread.

Fly: Extendible sections of ground or aerial ladders.

Foot stand, ladder: Devices attached to inside of beams of ladders that when folded down, provide foot space.

Ground jack: Heavy jacks attached to frame of chassis of aerial-equipped apparatus to provide stability when the aerial portion of the apparatus is used.

Ground mobile attack: The activities of wildland fire fighting with hose lines being used by personnel working around a moving engine. See mobile attack.

Guideline: An organizational directive that establishes a standard course of action.

Halyard: Rope used on extension ladders for the purpose of raising or lowering fly section(s). A wire cable may be referred to as a halyard when used on the uppermost fly section(s) of three or four section extension ladders.

Hazard communication program: A procedure to address comprehensively the issue of evaluating the potential hazards of chemicals and communicating information concerning hazards and appropriate protective measures to employees. See chapter 296-62 WAC, Part C, Hazard Communications.

Hazardous area: The immediate area where members might be exposed to a hazard.

Hazardous atmosphere: Any atmosphere, either immediately or not immediately dangerous to life or health, which is oxygen deficient or which contains a toxic or disease-producing contaminant.

Hazardous condition: The physical condition or act which is causally related to accident occurrence. The hazardous condition is related directly to both the accident type and the agency of the accident.

Hazardous material: A substance (solid, liquid, or gas) that when released is capable of creating harm to people, the environment, and property.

Hazardous substances: Substances that present an unusual risk to persons due to properties of toxicity, chemical activity, corrosivity, etiological hazards of similar properties.

HEPA filtration: High efficiency particulate air filtration found in vacuum system capable of filtering 0.3 micron particles with 99.97% efficiency.

Hose bed: Portion of fire apparatus where hose is stored.

Hose tower: A vertical enclosure where hose is hung to dry.

Hot zone: Area immediately surrounding a hazardous materials incident, which extends far enough to prevent adverse effects from hazardous materials releases to personnel outside the zone. This zone is also referred to as the exclusion zone or the restricted zone in other documents.

Identify: To select or indicate verbally or in writing using recognized standard terms. To establish the identity of; the fact of being the same as the one described.

IDLH: Immediately dangerous to life and health.

Imminent hazard (danger): An act or condition that is judged to present a danger to persons or property and is so immediate and severe that it requires immediate corrective or preventative action.

Incident commander: The person in overall command of an emergency incident. This person is responsible for the direction and coordination of the response effort.

Incident command system (ICS): A system that includes: Roles, responsibilities, operating requirements, guidelines and procedures for organizing and operating an on-scene management structure.

Incipient (phase) fire: The beginning of a fire; where the oxygen content in the air has not been significantly reduced and the fire is producing minute amounts of water vapor, carbon dioxide, carbon monoxide and other gases; the room has a normal temperature and can be controlled or extinguished with a portable fire extinguisher or small hose, e.g., a kitchen stove fire.

Industrial fire brigade: An organized group of employees whose primary employment is other than fire fighting who are knowledgeable, trained and skilled in specialized operations based on site-specific hazards present at a single commercial facility or facilities under the same management.

Initial stage (initial action): Shall encompass the control efforts taken by resources which are first to arrive at an incident.

Injury: Physical damage suffered by a person that requires treatment by a practitioner of medicine (a physician, nurse, paramedic or EMT) within one year of the incident regardless of whether treatment was actually received.

Interior structural fire fighting: The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. See structural fire fighting.

Life safety or rescue rope: Rope dedicated solely for the purpose of constructing lines for supporting people during rescue, fire fighting, or other emergency operations, or during training evolutions.

Line: Rope when in use.

Live fire training: Any fire set within a structure, tank, pipe, pan, etc., under controlled conditions to facilitate the training of fire fighters under actual fire conditions.

Locking in: The act of securing oneself to a ladder by hooking a leg over a rung and placing top of foot against the other leg or against the ladder.

Manned station: See staffed station.

May: A permissive use or an alternative method to a specified requirement.

Member: A person involved in performing the duties and responsibilities of a fire department under the auspices of the organization. A fire department member may be a full-time or part-time employee or a paid or unpaid volunteer, may occupy any position or rank within the fire department, and engages in emergency operations. Also see Employee.

Mobile attack: The act of fighting wildland fires from a moving engine.

Monitor: A portable appliance that delivers a large stream of water.

Mop up: The act of making a wildfire/wildland fire safe after it is controlled, such as extinguishing or removing burning materials along or near the control line, felling snags, trenching logs to prevent rolling.

NFPA: National Fire Protection Association.

NIIMS: National Interagency Incident Management System.

NIOSH: National Institute of Occupational Safety and Health.

Nondestructive testing: A test to determine the characteristics or properties of a material or substance that does not involve its destruction or deterioration.

Nonskid: The surface treatment that lessens the tendency of a foreign substance to reduce the coefficient of friction between opposing surfaces.

Occupational exposure: Means reasonably anticipated skin, eye, mucous membrane or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Officer: (1) Person in charge of a particular task or assignment.

(2) A supervisor.

OSHA: Occupational Safety and Health Administration.

Other potentially infectious materials (OPIM): (1) The following body fluids: Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;

(2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and

(3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Outrigger: Manually or hydraulically operated metal enclosures and jacks which are extended and placed in contact with the ground to give the apparatus a wide, solid base to support different loads.

Overhauling: That portion of fire extinguishment involving discovery of hidden fires or smoldering material.

PASS: Personal alert safety system.

PEL: Permissible exposure limit.

Personal protective equipment (PPE): (1) The equipment provided to shield or isolate a person from the chemical, physical, and thermal hazards that may be encountered at a hazardous materials incident. Personal protective equipment includes both personal protective clothing and respiratory protection. Adequate personal protective equipment should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing.

(2) Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts, or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

Place of employment: Any premises, room or other place where an employee or employees are employed for the performance of labor or service over which the employer has the right of access or control. For the purposes of this code, fireground and emergency scenes are also considered places of employment.

Platform: The portion of a telescoping or articulating boom used as a working surface.

Positive communication: Visual, audible, physical, safety guide rope, or electronic means which allows for two way message generation and reception.

PPE: Personal protective equipment.

Prefire training: The training of fire fighters in recognizing sources and locations of potential fires and the method of fire combat to be used.

Probable fatality: (1) An occupational injury or illness, which, by the doctor's prognosis, could lead to death.

(2) An occupational injury or illness, which by its very nature, is considered life threatening.

Protective clothing: Equipment designed to protect the wearer from heat and/or hazardous materials contacting the skin or eyes. Protective clothing is divided into five types:

- (1) Structural fire fighting protective clothing;
- (2) Liquid splash-protective clothing;
- (3) Vapor-protective clothing;
- (4) High temperature-protective proximity clothing; and
- (5) Wildland fire fighting clothing.

Note: See Protective ensemble.

Protective ensemble: Multiple elements of clothing and equipment designed to provide a degree of protection for fire fighters from adverse exposures to the inherent risks of structural fire fighting operations and certain other emergency operations. The elements of the protective ensemble are helmets, coats, trousers, gloves, footwear, interface components (hoods), and if applicable, personal alert system (PASS) devices, and self-contained breathing apparatus.

Proximity protective clothing: Radiant reflective protective garments configured as a coat and trousers, or as a coverall, and interface components that are designed to provide protection for the fire fighter's body from conductive, convective, and radiant heat.

Pumper: See engine.

Qualified: One who by possession of a recognized degree, certificate or professional standing, or who by knowledge, training or experience has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work or the project.

Rapid intervention team (RIT): On-scene team of at least two members designated, dedicated and equipped to effect an immediate rescue operation if the need arises.

RCW: Revised Code of Washington.

Rescue: Those activities directed at locating endangered persons at an emergency incident and removing those persons from danger.

Rescue craft: Any fire department watercraft used for rescue operations.

Respirator: A device designed to protect the wearer from breathing harmful atmospheres. See respiratory protection.

Respiratory equipment: Self-contained breathing apparatus designed to provide the wearer with a supply of respirable atmosphere carried in or generated by the breathing apparatus. When in use, this breathing apparatus requires no intake of air or oxygen from the outside atmosphere.

(1) Respirators (closed circuit): Those types of respirators which retain exhaled air in the system and recondition such air for breathing again.

(2) Respirators (open circuit): Those types of respirators which exhaust exhaled air to the outside of the mask into the ambient air.

(3) Respirators (demand): Those types of respirators whose input air to the mask is started when a negative pressure is generated by inhalation.

(4) Respirators (pressure demand): Those types of respirators which constantly and automatically maintain a positive pressure in the mask by the introduction of air when the positive pressure is lowered (usually from 0.018 psi to 0.064 psi) through the process of inhalation or leakage from the mask.

Respiratory protection: Equipment designed to protect the wearer from the inhalation of contaminants. Respiratory protection is divided into three types:

- (1) Positive pressure self-contained breathing apparatus (SCBA);
- (2) Positive pressure airline respirators;
- (3) Negative pressure air purifying respirators.

Responding: The usual reference to the act of responding or traveling to an alarm or request for assistance.

Risk assessment: To set or determine the possibility of suffering harm or loss, and to what extent.

Safe and healthful working environment: The work surroundings of an employee with minimum exposure to unsafe acts and/or unsafe conditions.

Safety officer: Either the fire department safety officer or an assistant safety officer (see fire department safety officer).

Safety net: A rope or nylon strap net not to exceed 6-inch mesh, stretched and suspended above ground level at the base of drill tower, and at such a height that a falling body would be arrested prior to striking the ground.

Scabbard: A guard which will prevent accidental injury and covers the blade and pick of an axe or other sharp instrument when worn by the fire fighter.

SCBA: Self contained breathing apparatus.

Service testing: The regular, periodic inspection and testing of apparatus and equipment according to an established schedule and procedure, to insure that it is in safe and functional operating condition.

Shall: Mandatory.

Should: Recommended.

Signalman: A person so positioned that he/she can direct the driver when the drivers vision is obstructed or obscured.

SOP: Standard operating procedure or guidelines.

Staffed station: A fire station continuously occupied by fire fighters on scheduled work shifts. The staffed station may also serve as headquarters for volunteers.

Standard operating procedure or guidelines: An organizational directive that establishes a standard course of action. See SOP.

Station (fire station): Structure in which fire service apparatus and/or personnel are housed.

Structural fire fighting: The activities of rescuing, fire suppression, and property conservation involving buildings, enclosed structures, vehicles, vessels, or similar properties that are involved in a fire or emergency situation. See interior structural fire fighting.

Structural fire fighting protective clothing: This category of clothing, often called turnout or bunker gear, means the protective clothing normally worn by fire fighters during structural fire fighting operations. It includes a helmet, coat, pants, boots, gloves, and a hood. Structural fire fighters' protective clothing provides limited protection from heat but may not provide adequate protection from the harmful gases, vapors, liquids, or dusts that are encountered during hazardous materials incidents.

Support function: A hazardous chemical operation involving controlled chemical uses or exposures in nonflammable atmospheres with minimum threats in loss of life, personnel injury, or damage to property or to the environment. Functions include decontamination, remedial cleanup of identified chemicals, and training.

Support function protective garment: A chemical-protective suit that meets the requirements of NFPA Standard on Support Function Garments, 1993.

Tail/running board: Standing space on the side or rear of an engine or pumper apparatus.

Team: Two or more individuals who are working together in positive communication with each other through visual, audible, physical, safety guide rope, electronic, or other means to coordinate their activities and who are in close proximity to each other to provide assistance in case of emergency.

Tillerman: Rear driver of tractor-trailer aerial ladder.

Trench: A narrow excavation made below the surface of the ground. The depth is generally greater than the width, but the width of a trench is not greater than 15 feet.

Turnout clothing: See structural fire fighting protective clothing.

Turntable: The rotating surface located at the base of an aerial ladder, or boom, on aerial apparatus.

Universal precaution: An approach to infection control. According to the concept of universal precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Vapor barrier: Material used to prevent or substantially inhibit the transfer of water, corrosive liquids and steam or other hot vapors from the outside of a garment to the wearer's body.

Variance: An allowed or authorized deviation from specific standard(s) when an employer substitutes measures which afford an equal degree of safety. Variances are issued as temporary or permanent with interim measures issued, when requested, until a determination or decision is made.

Vessel: Means every description of watercraft or other artificial contrivance used or capable of being used as a means of transportation on water, including special-purpose floating structures not primarily designed for or used as a means of transportation on water.

WAC: Washington Administrative Code.

Wheel blocks (chocks): A block or wedge placed under a wheel to prevent motion.

Wildfire: An unplanned and unwanted fire requiring suppression action; an uncontrolled fire, usually spreading through vegetative fuels and often threatening structures.

Wildland fire: A fire burning in natural vegetation that requires an individual or crew(s) to expend more than one hour of labor to confine, control and extinguish. Agencies may substitute crews to avoid the one hour bench mark or increase crew size to complete the job in less than one hour. One hour was chosen as the maximum time that individuals should work in high temperatures in structural protective clothing.

Wildland fire fighting enclosure: A fire apparatus enclosure with a minimum of three sides and a bottom.

WISHA: Washington Industrial Safety Health Act.

Work environment: The surrounding conditions, influences or forces to which an employee is exposed while working.

Workplace: See place of employment.

WRD: WISHA regional directive.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-01005, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-01005, filed 5/10/96, effective 1/1/97.]

WAC 296-305-01509 Management's responsibility.

(1) It shall be the responsibility of management to establish, supervise, maintain, and enforce, in a manner which is effective in practice:

(a) A safe and healthful working environment, as it applies to noncombat conditions or to combat conditions at a

fire scene after the fire has been extinguished, as determined by the officer in charge.

(b) An accident prevention program as required by this chapter.

(c) Programs for training employees in the fundamentals of accident prevention.

(d) Procedures to be used by the fire department safety officer and incident commander to ensure that emergency medical care is provided for members on duty.

(e) An accident investigation program as required by this chapter.

(2) The fire department shall be responsible for providing suitable expertise to comply with all testing requirements in this chapter. Such expertise may be secured from within the fire department, from equipment and apparatus manufacturers, or other suitable sources.

(3) Members who are under the influence of alcohol or drugs shall not participate in any fire department operations or other functions. This rule does not apply to persons taking prescription drugs as directed by a physician or dentist providing such use does not endanger the worker or others.

(4) Alcoholic beverages shall not be allowed in station houses, except at those times when station houses are used as community centers, with the approval of management.

(5) A bulletin board or posting area exclusively for safety and health and large enough to display the required safety and health posters. The WISHA poster (WISHA form F416-081-000) and other safety education material shall be provided. A bulletin board of "white background" and "green trim" is recommended.

(6) The fire department shall develop and maintain a hazard communication program as required by chapter 296-62 WAC, Part C, which will provide information to all employees relative to hazardous chemicals or substances to which they are exposed, or may routinely be exposed to, in the course of their employment.

(7) Personnel.

(a) The employer shall assure that employees who are expected to do interior structural fire fighting are physically capable of performing duties that may be assigned to them during emergencies.

(b) The employer shall not permit employees with known physical limitations reasonably identifiable to the employer, for example, heart disease or seizure disorder, to participate in structural fire fighting emergency activities unless the employee has been released by a physician to participate in such activities.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-01509, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-01509, filed 5/10/96, effective 1/1/97.]

WAC 296-305-02001 Personal protective equipment and protective clothing.

Note: For wildland fire fighting personal protective equipment and clothing requirements see WAC 296-305-07003, Personal protective clothing and equipment for wildland fire fighting.

(1) Employers shall provide and maintain at no cost to the employee the appropriate protective ensemble/protective

clothing to protect from the hazards to which the member is or is likely to be exposed. Employers shall ensure the use of all protective equipment and clothing required by this standard. Employers shall assure that the protective clothing and equipment ordered or purchased after the effective date of this standard meets the requirements of this standard. Full protective equipment designated for the task, shall be worn for all department activities.

(2) Fire fighters shall be trained in the function, donning and doffing, care, use, inspection, maintenance and limitations of the protective equipment assigned to them or available for their use.

(3) Protective clothing and protective equipment shall be used and maintained in accordance with manufacturer's instructions. A written maintenance, repair, retirement, servicing, and inspection program shall be established for protective clothing and equipment. Specific responsibilities shall be assigned for inspection and maintenance. This requirement applies to fire fighter's personally owned equipment as well as equipment issued by the employer.

(4) The fire department shall provide for the cleaning of protective clothing and contaminated station/work uniforms at no cost to the employee. Such cleaning shall be performed by either a cleaning service, or at a fire department facility, that is equipped to handle contaminated clothing.

Note: See Appendix A.

(5) Personal protective equipment and clothing shall be of a type specified by NIOSH, MSHA, NFPA, ANSI, or as specifically referenced in the appropriate section of this chapter.

(6) Station/work uniforms. Station/work uniforms are not themselves intended as primary protective garments.

(a) Station/work uniforms if provided, shall meet the requirements as specified in the 1990 or 1994 edition of NFPA 1975.

(b) All station/work uniforms purchased after the effective date of this regulation shall meet the requirements set forth in this standard.

(c) Station/work uniforms include trousers, and/or coveralls, but exclude shirts, underwear, and socks.

(d) Members shall not wear any clothing that is determined to be unsafe due to poor thermal stability or poor flame resistance when engaged in or exposed to the hazards of structural fire fighting. Because it is impossible to ensure that every member will respond to an incident in a station/work uniform or will change out of fabrics that have poor thermal stability or ignite easily, before donning protective garments, the fire department shall inform members of the hazards of fabrics that melt, drip, burn, stick to the skin and cause burns to the wearer due to poor thermal stability or poor flame resistance.

(e) Garments meeting the requirements of WAC 296-305-07003(1), meet the intent of this section.

(f) Station/work uniforms purchased prior to the effective date of this chapter shall be acceptable for a period of two years or until the employers current inventory has been exhausted, whichever comes first.

(7) Turnout clothing/pants and coat:

Proximity clothing:

(a) All turnout clothing used as proximity clothing shall meet the requirements of NFPA, 1976 Standard on Protective Clothing for Proximity Fire Fighting, 1992 edition.

(b) There shall be at least a two-inch overlap of all layers of the protective coat and the protective trousers so there is no gaping of the total thermal protection when the protective garments are worn. The minimum overlap shall be determined by measuring the garments on the wearer, without SCBA, with the wearer in the most stretched position, hands together reaching overhead as high as possible.

(c) Single piece protective coveralls shall not be required to have an overlap of all layers as long as there is continuous full thermal protection.

(d) Fire departments that provide protective coats with protective resilient wristlets secured through a thumb opening may provide gloves of the gauntlet type for use with these protective coats. Fire departments that do not provide such wristlets attached to all protective coats shall provide gloves of the wristlet type for use with these protective coats.

(8) Structural fire fighting clothing.

(a) All turnout clothing purchased after the effective date of these regulations shall meet the requirements of the 1991 edition of NFPA, Standard on Protective Clothing for Structural Fire Fighting 1971 or the 1997 edition of NFPA, Standard on Protective Ensemble for Structural Fire Fighting 1971. In no case, shall fire fighters wear personal protective clothing manufactured prior to the 1986 edition, NFPA, Standard on Protective Clothing for Structural Fire Fighting 1971.

(b) Turnout clothing shall be maintained as specified by the manufacturer.

(c) Repairs to turnout clothing shall be done to the manufacturer's specification by qualified individuals approved by the manufacturer. Repairs must be made using materials and methods in accordance with the applicable standards under which the article was produced. Repairs include any and all alterations, modifications, additions, deletions or any other change made to the manufacturer's PPE article.

(d) Turnout clothing which is damaged or does not comply with this section shall not be used.

(e) All turnout clothing shall be inspected semi-annually by an individual qualified by the employer. Inspection intervals shall not exceed six months.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-02001, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-02001, filed 5/10/96, effective 1/1/97.]

WAC 296-305-02003 Eye and face protection. (1)

Face and eye protection shall be provided for and used by fire fighters engaged in fire suppression and other operations involving hazards to the eye and face at all times when the face is not protected by the full facepiece of the SCBA. Primary face and eye protection appropriate for a given specific hazard shall be provided for, and used by, members exposed to that specific hazard. Such primary face and eye protection shall meet the requirements of ANSI Z87.1, 1989 edition.

(2) Persons whose vision requires the use of corrective lenses in spectacles, and who are required by this standard to wear eye protection, shall wear goggles or spectacles of one of the following types:

(a) Spectacles with protective lenses that provide optical correction.

(b) Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.

(c) Goggles that incorporate corrective lenses mounted behind the protective lens.

(3) When limitations or precautions are indicated by the manufacturer, they shall be transmitted to the user and care taken to see such limitations and precautions are strictly observed.

(4) Care, use, and maintenance for any type of eye or face protection shall follow the manufacturer's suggested recommendations.

(5) Goggles shall be inspected, cleaned and disinfected prior to being reissued to other employees.

Note: The helmet face shield alone does not always provide adequate eye protection against flying particles, splash, gases and vapors. For known eye hazards, such as, but not limited to, cutting with power saws, chopping, drilling and using extrication equipment, the face shield should be worn with additional eye protection.

(6) Helmet face shields shall meet the requirements of NFPA, Standard Helmets for Structural Fire Fighting 1972, 1992 edition.

(7) For fire fighters that do not have a helmet face shield for eye and face protection, flexible or cushioned fitting goggles shall be provided.

(8) Goggles shall consist of a wholly flexible frame, forming a lens holder or a rigid frame with integral lens or lenses, having a separate, cushioned fitting surface on the full periphery of the facial contact area.

(a) Materials used shall be chemical-resistant, nontoxic, nonirritating and slow burning.

(b) There shall be a positive means of support on the face, such as an adjustable headband of suitable material or other appropriate means of support to retain the frame comfortable and snugly in front of the eyes.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-02003, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-02003, filed 5/10/96, effective 1/1/97.]

WAC 296-305-02007 Hand protection. (1) Fire fighters' gloves shall when worn with turnout clothing, provide protection to the wrist area. In turnout clothing where wristlet protection is not provided fire fighters' gloves shall be closed at the top.

(2) Fire departments shall establish written policy and procedure for the care, use, cleaning, replacement and/or retirement criteria, and maintenance of gloves issued.

(3) Gloves purchased after the effective date of this chapter shall comply with this section.

(4) Fire fighters' gloves used during structural fire fighting operations including rescue of victims from fires, and emergency medical operations where sharp or rough surfaces are likely to be encountered such as victim extrications shall meet the requirements of the 1993 edition of NFPA, Standard on Gloves for Structural Fire Fighting 1973 or the 1997 edition of NFPA, Standard on Protective Ensemble for Structural Fire Fighting 1971.

(5) Fire fighters gloves are not designed to provide protection to all environments. For gloves desired to fill the needs of a specific requirement see that specific section of this chapter. It is the intent of this section to provide protection from intrusion throughout the glove body by certain common chemicals, and from bloodborne pathogens. Fire departments shall consult the manufacturer's recommendation.

Note: Fire fighters should have their hands sized for compliance with the sizing chart as specified in NFPA, Standard on Gloves for Structural Fire Fighting 1973, 1993 edition.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-02007, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-02007, filed 5/10/96, effective 1/1/97.]

WAC 296-305-02013 Foot protection for structural fire fighting. (1) Protective footwear purchased after the effective date of this standard shall comply with the 1992 edition of NFPA, Standard on Protective Footwear for Structural Fire Fighting 1974 or the 1997 edition of NFPA, Standard on Protective Ensemble for Structural Fire Fighting 1971.

(2) Fire departments shall establish written policy and procedure, care, use, maintenance, and retirement criteria for footwear in conjunction with the manufacturer's recommendations.

Note: Fire departments should establish cleaning and drying instruction including applicable warning regarding detergents, soaps, cleaning additives and bleaches for protective footwear.

(3) Fire fighter footwear may be resoled but the footwear upon resoling shall meet the requirements specified in this section.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-02013, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-02013, filed 5/10/96, effective 1/1/97.]

WAC 296-305-02015 Head protection. (1) Fire fighters who engage in or are exposed to the hazards of structural fire fighting shall be provided with and use helmets that meet the requirements of NFPA 1972, Standard on Helmets for Structural Fire Fighting, 1987 edition.

(2) Helmets purchased thirty days after the adoption of this chapter shall meet the requirements of the 1992 edition of NFPA, Standard on Helmets for Structural Fire Fighting 1972 or the 1997 edition of NFPA, Standard on Protective Ensemble for Structural Fire Fighting 1971.

(3) Fire departments shall establish a written policy and procedure for the care, use, maintenance, and retirement criteria for helmets.

(4) Helmets shall be provided with face shields or goggles.

(5) Helmet accessories shall not interfere with the function of the helmet or its components parts and shall not degrade the helmets performance.

(6) Helmets shall be maintained in accordance with the manufacturer's recommendations. No modifications shall be made without prior written approval from the manufacturer.

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(7) Fire fighters shall follow the manufacturer's recommendations regarding cleaning, painting, marking, storage, and frequency and details of inspection.

Note: Helmets should be stored at room temperature and out of direct sunlight.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-02015, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-02015, filed 5/10/96, effective 1/1/97.]

WAC 296-305-02501 Emergency medical protection.

(1) Fire fighters who perform emergency medical care or otherwise may be exposed to blood or other body fluids shall be provided with emergency medical face protection devices, and emergency medical garments that meet the applicable requirements of NAPA, Standard on Protective Clothing for Emergency Medical Operations 1999, 1992 edition.

Note: Prior to purchase, fire departments should request the technical data package required in NAPA 1999, 1992 edition, in order to compare glove and garment performance data. Departments reviewing these packages should ensure a relative ranking of the performance data before they purchase in order to provide the best performance of the EMS personal protective clothing.

(2) Fire fighters shall don emergency medical gloves prior to initiating any emergency patient care.

(3) Fire fighters shall don emergency medical garments and emergency medical face protection devices prior to any patient care during which splashes of body fluids can occur such as situations involving spurting blood or childbirth.

Note: Fire fighter turnout gear and gloves with vapor barriers may be used in lieu of emergency medical gloves and garments.

(4) Contaminated emergency medical garments, emergency medical face protection, gloves, devices, and emergency medical gloves shall be cleaned and disinfected, or disposed of, in accordance with WAC 296-62-08001, Part J, Blood borne pathogens.

(5) Fire departments shall establish a designated infection (exposure) control officer who shall ensure that an adequate infection control plan is developed and all personnel are trained and supervised on the plan.

(6) The infection control officer shall be responsible for establishing personnel exposure protocols so that a process for dealing with exposures is in writing and available to all personnel.

(7) The infection control officer or his/her designee will function as a liaison between area hospitals and fire department members to provide notification that a communicable disease exposure is suspected or has been determined by hospital medical personnel. The department infection control officer will institute the established exposure protocols immediately after report of an exposure. The infection control officer shall follow the confidentiality requirements of chapter 246-100 WAC and the medical protocol requirements of WAC 296-62-05209.

(8) Fire departments shall have a written infection (exposure) control plan which clearly explains the intent, benefits, and purpose of the plan. The written document must cover the standards of exposure control such as establishing the infection control officer and all members affected; education

and training; HB. vaccination requirements; documentation and record keeping; cleaning/disinfection of personnel and equipment; and exposure protocols.

(9) Policy statements and standard operating procedure guidelines shall provide general guidance and specific regulation of daily activities. Procedures shall include delegation of specific roles and responsibilities, such as regulation of infection control, as well as procedural guidelines for all required tasks and functions.

(10) Fire departments shall establish a records system for members health and training.

(11) Fire fighters shall be trained in the proper use of P.E., exposure protection, post exposure protocols, disease modes of transmission as it related to infectious diseases.

(12) Infectious disease programs shall have a process for monitoring fire fighters compliance with established guidelines and a means for correcting noncompliance.

(13) Fire department members shall be required to annually review the infectious disease plan, updates, protocols, and equipment used in the program.

(14) Fire departments shall comply with WAC 296-62-08001, Part J, Blood borne pathogens, in its entirety.

(15) Tuberculosis (TB) exposure and respiratory protection requirements.

(a) Fire fighters shall wear a particulate respirator (PR) when entering areas occupied by individuals with suspected or confirmed TB, when performing high risk procedures on such individuals or when transporting individuals with suspected or confirmed TB in a closed vehicle.

(b) A NOSH-approved, 95% efficient particulate air respirator is the minimum acceptable level of respiratory protection.

(i) Fit tests are required.

(ii) Fit tests shall be done in accordance with chapter 296-62 WAC, Part E.

Note 1: Emergency-response personnel should be routinely screened for tuberculosis at regular intervals. The tuberculin skin test is the only method currently available that demonstrates infection with *Mycobacterium tuberculosis* (M. tuberculosis) in the absence of active tuberculosis.

Note 2: If possible, the rear windows of a vehicle transporting patients with confirmed, suspected, or active tuberculosis should be kept open, and the heater or air conditioner set on a noncirculating cycle.

Additional References:

Chapter 296-62 WAC, Part J, Biological Agents-Blood-borne Pathogens.

WAC 296-62-08001(3), Exposure Control.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-305-02501, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 96-11-067, § 296-305-02501, filed 5/10/96, effective 1/1/97.]

WAC 296-305-04001 Respiratory equipment protection. (1) Fire fighter's self-contained breathing apparatus (SCBA) shall:

- (a) Be pressure demand type (positive pressure);
- (b) Operate in the positive pressure mode only;
- (c) Have a minimum of thirty minutes service duration;
- (d) Be NIOSH certified; and

(e) Meet the requirements of the 1992 or 1997 edition of NFPA, Standard on Open Circuit Self Contained Breathing Apparatus for Fire Fighters 1981.

(2) Closed circuit SCBA shall:

- (a) Be positive pressure;
- (b) Be NIOSH certified; and
- (c) Have a minimum thirty-minute service duration.

(3) Members using SCBA's shall operate in teams of two or more.

(4) Except as otherwise provided in this chapter, fire departments shall adopt, maintain and implement a written respiratory protection program that addresses the requirements of chapter 296-62 WAC, Part E, Respiratory protection and Part I-1, Asbestos, Tremolite, Anthophyllite, and Actinolite. This includes program administration, medical limitations, equipment limitations, equipment selection, inspection, use, maintenance, training, fit testing procedures, air quality, and program evaluation.

Note: Additional information on respirators and respirator usage can be found in ANSI Z88.2 - American National Standard for Respiratory Protection; ANSI Z88.5 - Practices for Respiratory Protection for Fire Service; various NFPA publications (1981, 1404, 1500, etc.), and the Washington State Fire Service Training Program for respiratory training and usage.

(5) When fire departments purchase compressed breathing air from a vendor, the fire department shall require the vendor to provide certification and documentation of breathing air quality as specified in subsection (21) of this section and in chapter 296-62 WAC, Part E.

(6) When the fire department makes its own breathing air or uses vendor purchased breathing air, the air quality from compressors, cascade systems cylinders, shall be tested at least quarterly as specified in subsection (21) of this section.

(7) Fit testing shall be conducted in accordance with this section and chapter 296-62 WAC, Part E, Respiratory protection.

(a) Each new member shall be tested before being permitted to use SCBA's in a hazardous atmosphere.

(b) Only fire fighters with a properly fitting facepiece shall be permitted by the fire department to function in a hazardous atmosphere with SCBA. (Reference WAC 296-62-07115(3) Respiratory Sealing Problems.)

(c) Fit testing shall be repeated:

(i) At least once every twelve months.

(ii) Whenever there are changes in the type of SCBA or facepiece used.

(iii) Whenever there are significant physical changes in the user. Example: Weight change of ten percent or more, scarring of face seal area, dental changes, cosmetic surgery, or any other condition that may affect the fit of the facepiece seal.

(d) The fit testing is done only in a negative-pressure mode. If the facepiece is modified for fit testing, the modification shall not affect the normal fit of the device. Such modified devices shall only be used for fit testing.

(e) The fit test procedures and test exercises described in WAC 296-62-07739, Asbestos, Appendix C, shall be followed unless stated otherwise in this chapter.

(f) Respirator fit test records shall include:

- (i) Written guidelines for the respirator fit testing program including pass/fail criteria;
- (ii) Type of respirator tested including manufacturer, model, and size;
- (iii) Type of fit test and instrumentation or equipment used;
- (iv) Name or identification of test operator;
- (v) Name of person tested;
- (vi) Date of test; and
- (vii) Results of test.

Note: Fire fighters should be issued individual facepieces.

(8) Facial hair, contact lenses, and eye and face protective devices.

(a) A negative pressure respirator, any self-contained breathing apparatus, or any respirator which is used in an atmosphere immediately dangerous to life or health (IDLH) equipped with a facepiece shall not be worn if facial hair comes between the sealing periphery of the facepiece and the face or if facial hair interferes with the valve function.

(b) The wearer of a respirator shall not be allowed to wear contact lenses if the risk of eye damage is increased by their use.

(c) If a spectacle, goggle, or face shield must be worn with a facepiece, it shall be worn so as to not adversely affect the seal of the facepiece to the face. See WAC 296-62-07115(3).

(d) Straps or temple bars shall not pass between the seal or surface of the respirator and the user's face.

(9) At the end of suppression activities (to include fire overhaul) and before returning to quarters:

(a) Fire fighters shall be decontaminated prior to removal of respirators whenever fire fighting activities resulted in exposure to a hazardous substance.

(b) When exchanging air supply bottles during suppression or overhaul activities, reasonable precautions shall be taken to maintain uncontaminated atmosphere to the breathing zone and facepiece supply hose.

(10) Self-contained respiratory equipment shall be available and used by all fire fighters who enter into hazardous atmospheres during structural fire fighting activities.

(11) Positive pressure air line respirators may be used only for atmospheres other than IDLH and must be equipped with a five minute minimum capacity positive pressure escape bottle.

(a) If the service life of the auxiliary air supply is fifteen minutes or less it shall not be used for entry into an IDLH atmosphere but it may be used for escape purposes. The auxiliary air supply may be used for entry into an IDLH atmosphere only when the service life of the unit exceeds fifteen minutes and when not more than twenty percent of the noted air supply will be used during entry.

(b) The maximum length of hose for supplied air respirators is 300 feet (91 meters). Such hose shall be heavy duty nonkinking and NIOSH approved.

(12) Respirators shall be provided for, and shall be used by, all personnel working in areas where:

- (a) The atmosphere is hazardous;
- (b) The atmosphere is suspected of being hazardous; or
- (c) The atmosphere may rapidly become hazardous;

(13) Anytime fire fighters are working inside a confined space, such persons shall be provided with SCBA or air line respirator with escape bottle, and shall use the equipment unless the safety of the atmosphere can be established by testing and continuous monitoring.

(14) Fire fighters using a properly functioning SCBA shall not compromise the protective integrity of the SCBA by removing the facepiece for any reason in hazardous atmospheres or in atmospheres where the quality of air is unknown.

(15) Fire fighters shall receive training for each type and manufacturer of respiratory equipment available for their use, the step-by-step procedure for donning the respirator and checking it for proper function. Required training shall include:

- (a) Recognizing hazards that may be encountered;
- (b) Understanding the components of the respirator;
- (c) Understanding the safety features and limitations of the respirator; and
- (d) Donning and doffing the respirator.

(16) After completing such training, each fire fighter shall practice at least quarterly, for each type and manufacturer of respirator available for use, the step-by-step procedure for donning the respirator and checking it for proper function.

(17) Members shall be tested at least annually on the knowledge of respiratory protection equipment operation, safety, organizational policies and procedures, and facepiece seals, to the fire department's standard. Such records shall remain part of the member training file.

(18) Members shall be allowed to use only the make, model, and size respirator for which they have passed a fit test within the last twelve months.

(19) In cases where there is a reported failure of a respirator, it shall be removed from service, tagged and recorded as such, and tested before being returned to service.

(20) Fire fighters shall be thoroughly trained in accordance with the manufacturer's instructions on emergency procedures such as use of regulator bypass valve, corrective action for facepiece and breathing tube damage, and breathing directly from the regulator (where applicable).

(21) Compressed gaseous breathing air in the SCBA cylinder shall meet the requirements of ANSI/CGA G7.1 - Commodity Specification for Air, with a minimum air quality of grade D, as well as meeting a water vapor level of 24 ppm or less.

(22) SCBA cylinders shall be hydrostatically tested within the periods specified by the manufacturer and the applicable governmental agencies.

Additional reference: Chapter 296-62 WAC, Part E.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-04001, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-04001, filed 5/10/96, effective 1/1/97.]

WAC 296-305-04501 Automotive fire apparatus design and construction. (1) All new fire apparatus with the exception of specialized equipment, shall conform to the following minimum safety standards contained in NFPA Booklets No. 1901, 1902, 1903, 1904, and other 1900's.

(2) Fire apparatus, purchased after December 17, 1977, weighing 10,000 pounds or more shall conform with the following U.S. Department of Transportation standards, when applicable:

(a) 49 CFR Ch. V (10-93 edition) 571.121 "Air brake systems";

(b) 49 CFR Ch. V (10-93 edition) 571.106 "Hydraulic brake hoses";

(c) 49 CFR Ch. V (10-93 edition) 571-211 "Hydraulic brake hoses".

(3) Employers acquiring used apparatus or used equipment shall not be required to bring it under a more stringent code than the one in force at the time the apparatus was manufactured. However, such vehicle must meet applicable U.S. Department of Transportation standards and WAC 296-24-233.

(4) Fire apparatus tailboards and steps shall have a non-skid rough surface.

(5) Exhaust systems shall be installed and maintained in proper condition, and shall be so designed as to minimize the exposure of the fire fighter to the exhaust gases and fumes.

(6) Spinner knobs shall not be attached to the steering handwheel of fire apparatus.

(7) The transmission shifting pattern of the apparatus shall be clearly stenciled or labeled and posted so it can be clearly read by the driver while operating the apparatus.

(8) The height of any apparatus, over seven feet in height from the ground to the top of the beacon or highest point of the apparatus, shall be clearly labeled in a place where it can be easily and clearly read by the driver while operating the apparatus.

(9) All apparatus in excess of 10,000 pounds loaded weight, shall have the weight of the vehicle in pounds and tons clearly labeled in a place where it can be easily and clearly read by the driver while operating the apparatus.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-04501, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-04501, filed 5/10/96, effective 1/1/97.]

WAC 296-305-04503 Automotive fire apparatus equipment. (1) Vehicles used to transport fire fighters and employer representatives shall have compartments for carrying sharp tools, saws, chisels, axes, etc., or if carried on the outside of the apparatus, equipment with sharp points and edges shall be covered to prevent injury to fire fighters and employer representatives.

(2) Personnel restraints for traveling.

(a) All persons riding on fire apparatus shall be seated and secured to the vehicle by seatbelts or safety harnesses at any time the vehicle is in motion.

(b) Seatbelts shall comply with U.S. Department of Transportation Part 49 CFR Section 571, Standards 209 and 210.

(c) Riding on tailsteps or in any other exposed position such as sidesteps or running boards shall be specifically prohibited.

(d) Standing while riding shall be specifically prohibited.

(e) Members actively performing necessary emergency medical care while the vehicle is in motion shall be restrained

to the extent consistent with the effective provision of such emergency medical care. All other persons in the vehicle shall be seated and belted in approved seating positions while the vehicle is in motion.

(f) Fire departments permitting hose loading operations while the vehicle is in motion shall develop a written policy and guidelines addressing all safety aspects.

Note: Policy and operating guidelines should address:

- The assigning of a member as a safety observer who should have an unobstructed view of the hose loading operation and be in visual and voice contact with the driver.
- Allowed maximum fire apparatus speed when hose loading;
- Control of nonfire department vehicular traffic; and
- Allowing members in the hose bed, but limit standing to only when the vehicle is not moving.

Note: See WAC 296-305-07011(3) for exceptions for wildland vehicles.

(3) Each fire apparatus shall carry a current U.S. Department of Transportation chemical identification book or the equivalent.

(4) Ladders stowed on the sides of apparatus, which protrude past the tailboard, shall have guards over the protruding ends.

(5) No employer shall permit automotive fire apparatus equipment which has an obstructed view to the rear, to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-04503, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 96-11-067, § 296-305-04503, filed 5/10/96, effective 1/1/97.]

WAC 296-305-05001 Emergency fireground operations—Structural. (1) The fire department shall establish an incident command system (ICS) with written guidelines applying to all members involved in emergency operations. All members involved in emergency operations shall be familiar with the ICS system. Personnel shall be trained and qualified by their department in the incident command system prior to taking a supervisory role at an emergency scene.

(2) At an emergency incident, the incident commander shall be responsible for the overall safety of all members and all activities occurring at the scene.

(3) All emergency incidents shall be managed by an ICS; the incident commander shall establish an organization with sufficient supervisory personnel to control the position and function of all members operating at the scene and to ensure that safety requirements are satisfied.

(4) At an emergency incident, the incident commander shall have the responsibility to:

(a) Assume and confirm command and take an effective command position.

(b) Perform situation evaluation that includes risk assessment.

(c) Initiate, maintain, and control incident communication.

(d) Develop an overall strategy and attack plan and assign units to operations.

(e) Develop an effective incident organization by managing resources, maintaining an effective span of control, and maintaining direct supervision over the entire incident by creating geographical and/or functional areas as appropriate for the scope and size of the incident.

(f) Review, evaluate, and revise the operational plan as required.

(g) Continue, transfer, and terminate command.

(5) The fire department shall develop a risk management policy that can be implemented into the function of incident command and the development of incident strategies.

The risk management policy should include direction and guidance to the incident commander in formulating incident planning relating to the level of risk that may be undertaken in any given incident to save lives and to save property in as safe a manner as dictated by the situation.

(6) The fire department shall establish written procedures and guidelines for tracking all members operating at an emergency incident.

(7) The incident command system shall provide for control of access to hazardous areas of the incident scene by department members.

(8) Fire fighters operating in hazardous areas at emergency structural fire incidents shall operate in teams of two or more.

Team members operating in hazardous areas shall be in communication with each other through visual, audible, physical, safety guide rope, or electronic means, or by other means in order to coordinate their activities. Team members shall be in close proximity to each other to provide assistance in case of emergency.

(9) The fire department shall provide personnel for the rescue of members operating at emergency incidents as the need arises.

(10) Before beginning interior structural fire fighting operations, the incident commander must evaluate the situation and risks to operating teams.

(a) Except as provided in WAC 296-305-05001(11), fire fighters must not engage in interior structural fire fighting in the absence of at least two standby fire fighters.

(b) All standby fire fighters must be fully equipped with the appropriate protective clothing, protective equipment and SCBA.

(c) Standby members must remain aware of the status of fire fighters in the hazardous area.

(d) Standby members must remain in positive communication with the entry team(s), in full protective clothing the SCBA donned in the standby mode.

(e) Standby members may be permitted to perform other duties outside the hazardous area, provided constant communication is maintained between a standby member and the entry team(s), and provided that those duties will not interfere with the standby members' ability to participate in a rescue as appropriate.

(f) Early consideration should be given to providing one or more rapid intervention teams commensurate with the needs of the situation.

(11) In the "initial stage" of a structure fire-incident where only one team is operating in the hazardous area, where additional resources can reasonably be expected, and

where exceptional circumstances indicate that immediate action may be necessary to prevent or mitigate the loss of life or serious injury to citizenry or fire fighters, at least one additional fire fighter must be assigned to stand by outside the hazardous area where the team is operating.

(a) The standby fire fighter must remain aware of the status of fire fighters in the hazardous area.

(b) The standby fire fighter must remain in positive communication with the entry team, in full protective clothing with SCBA donned in the standby mode.

(c) The standby fire fighter may be permitted to perform other duties outside the hazardous area, provided constant communications is maintained with the team in the hazardous area, and provided that those duties will not interfere with his or her ability to initiate a rescue as appropriate.

(d) Once additional resources have arrived on the scene, the incident must no longer be considered in its initial stage and all the requirements of WAC 296-305-05001(10) must be met.

Note: Nothing in this section shall prevent activities which may reasonably be taken by members first on the scene to determine the nature and extent of fire involvement.

(12) The fire department shall develop and maintain written guidelines for the safety of members at incidents that involve violence, unrest, or civil disturbance. Such situations may include but not be limited to riots, fights, violent crimes, drug related situations, family disturbances, deranged individuals, and people interfering with fire department operations.

(13) Officers at emergency scenes shall maintain an awareness of the physical condition of members operating within their span of control and ensure that adequate steps are taken to provide for their safety and health. The command structure shall be utilized to request relief and reassignment of fatigued crews.

(14) Wildfire suppression personal protective clothing/equipment shall not be utilized for interior attacks on structures.

(15) Teams in the hazardous area shall have positive communication capabilities with the incident command structure. Incident radio communication capabilities within the incident command structure shall include monitoring of incident-assigned frequencies (including mutual aid radio frequencies).

(16) Prior to overhaul, buildings shall be surveyed for possible safety and health hazards. Fire fighters shall be informed of hazards observed during the survey.

(17) During the overhaul phase officers shall identify materials likely to contain asbestos, limiting the breaching of structural materials to that which is necessary to prevent rekindle.

(18) Floatation devices shall be made available to fire fighters at incidents where drowning is a possibility. This is not intended to include pools and hot tubs.

(19) Fire fighters shall not cut the electrical drip loop providing power to the structure nor pull the electrical meter.

(20) Traffic cones or other traffic control devices shall be utilized when vehicular traffic hazards exist at an emergency operation.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-305-05001, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050

and [49.17].060. 96-11-067, § 296-305-05001, filed 5/10/96, effective 1/1/97.]

WAC 296-305-05007 Trench rescue operations. (1) Fire departments that engage in trench rescue operations shall adopt and maintain a written response program that addresses training and procedures to follow in emergency life threatening situations.

(2) Employees that directly engage in trench rescue operations shall be trained or shall be under the direct supervision of person(s) with adequate training in trench and excavation hazard recognition, equipment use and operational techniques.

[Statutory Authority: RCW 49.17.040. 99-05-080, § 296-305-05007, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 96-11-067, § 296-305-05007, filed 5/10/96, effective 1/1/97.]

WAC 296-305-05009 Watercraft rescue operations.

(1) If a manufacturer's specifications are such that an engineer is required for the operation of a vessel, then one shall be provided.

(2) When fire boats perform rescue activities they shall have two dedicated personnel. Any member not specifically required to operate the vessel, e.g., an operator (pilot) or engineer (if required by the manufacturer's specification) may be used as a deck hand. This may include the boat officer if his/her duties do not include operating the fire boat.

(3) Watercraft load capabilities shall not exceed the manufacturer's specifications.

(4) Each fire department shall determine the function of their watercraft; as fire fighting, rescue, or both.

(5) Watercraft operating within navigable waters of the state of Washington (as defined by the United States Coast Guard) shall comply with all of the rules of the United States Coast Guard.

(6) Fire boats operating within navigable waters of the state of Washington (as defined by the United States Coast Guard) shall have a fully dedicated pilot.

(7) The operator (pilot) of the watercraft is responsible for its safe operation.

(8) Training for all personnel shall represent the intent of the employer and physical characteristics of the vessel involved and shall be included in the employer's accident prevention program.

(a) All assigned personnel shall be trained in safe operation of watercraft and the operations the craft is intended to perform.

(b) All employees involved in water rescue shall be trained in water rescue techniques and wear Coast Guard approved personal flotation devices, Type III, minimum.

Exception: Employees working below deck or in enclosed cabins.

(9) All employers operating watercraft in nonnavigable waters shall be responsible for training all employees to local hazards.

[Statutory Authority: RCW 49.17.040. 99-05-080, § 296-305-05009, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 96-11-067, § 296-305-05009, filed 5/10/96, effective 1/1/97.]

WAC 296-305-06005 Ground ladders. This section establishes the minimum requirements for the construction, care and use of the common types of ladders used in fire combat.

(1) Ladder locks or pawls on extension ladders shall be so fastened or secured to the beams that vibration and use will not cause loosening of bolts and nuts.

(a) Pawls or ladder locks shall be so constructed that the hook portion of the pawl that engages the rung shall have sufficient bearing surface or area to prevent the hook from cutting into rungs when engaged.

(b) Such hooks shall be properly finished to eliminate sharp edges and points.

(2) Staypoles or tormenters shall be furnished on all extension ladders extending over forty feet. Staypole or tormenters spikes shall not project beyond the butt of the ladder when nested.

(3) All ladders shall be stored in a manner to provide ease of access for inspection, and to prevent danger of accident when withdrawing them for use.

(4) Fire fighters shall climb and descend ground ladders with the fly in, for safety purposes, when not in conflict with the manufacturer's recommendations. Even when ladders are routinely used in the fly out configuration, in adverse conditions fire fighters shall be permitted to climb and descend ground ladders with the fly in to assure secure footing.

(5) All ladders regardless of type shall be inspected thoroughly after each use. Records shall be kept of the inspections and repairs.

(6) The following metal ladder components shall be checked:

(a) Rungs for welds, damage or weakness caused by overloading or bumping against other objects, looseness and cracks, etc.

(b) Beams for welds, rivets and bolts, signs of strain or metal fatigue, and deformation from heat or overloading.

(c) Bolts and rivets for tightness.

(d) Butt spurs for excessive wear or other defects.

(e) Halyards for the same defects listed for wood ladder halyards and cable halyards, for fraying or breaking.

(f) Heat sensor label, when provided, for change indicating heat exposure.

(7) The following wood ladder components shall be checked:

(a) Bolts for snugness and tightness without crushing the wood.

(b) Beams for dark streaks; when a wood ground ladder develops dark streaks in the beams, the ladder shall be removed from service and service tested as specified in this chapter, prior to further use.

(c) Protective varnish finish for damage or wear, at least once a month and redone annually or at such frequency as specified by the manufacturer. If the protective finish becomes charred or blistered, the ladder shall be removed from service and service tested as specified in this chapter, prior to further use.

(8) Methods of fastening ladder halyards, either of wire or fibrous material, shall be in a manner that the connection is stronger than the halyard.

(9) Any defect noted in above visual inspection shall be corrected prior to testing.

(10) Every portable ladder shall be tested following the correction of defects disclosed by the visual inspections.

(11) New ground ladders purchased after the effective date of this chapter shall be constructed and certified in accordance with the requirements of NFPA Standard 1931, 1994 edition.

(12) All fireground ladders shall be inspected and maintained in accordance with the requirements of the 1994 edition of NFPA 1932. When metal ground ladders are tested, they shall be tested in accordance with the strength service testing procedures of the 1984 edition of NFPA 1932.

(a) Extension ladders that were constructed prior to the adoption of the 1984 edition of NFPA 1931, may, when tested in accordance with this chapter, be tested with a minimum test load of 400 pounds and a preload of 300 pounds. Ladders tested under this exception shall be used with a maximum load limit of 500 pound distributed or 400 pound concentrated. Ladders shall be tested in the configuration they are used.

(b) Additional requirements for wooden ground ladders; whenever any wood ground ladder has been exposed or is suspected of having been exposed to direct flame contact the ladder shall be service tested as specified in section 5-2 of NFPA Standard 1932, 1984 edition.

Note 1: Hardness testing and eddy current NDE testing is not required in the fire department annual maintenance inspection unless the individual ladder has been subjected to a high heat exposure which could have annealed the metal and diminished the structural integrity. The ladder manufacturer's recommendations should be followed with respect to hardness and eddy current testing.

Note 2: Testing should follow the recommended procedures taught by Washington State Fire Protection Bureau.

Additional references: Chapter 296-24 WAC, Part J-1.

[Statutory Authority: RCW 49.17.040. 99-05-080, § 296-305-06005, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 96-11-067, § 296-305-06005, filed 5/10/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-305-06005, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-305-06005, filed 11/30/83; Order 77-20, § 296-305-06005, filed 10/18/77 and Emergency Order 77-24, filed 11/17/77, effective 12/17/77.]

WAC 296-305-06007 Electrical. (1) Temporary lighting with the use of 110 - 120 VAC equipment.

(a) All lighting equipment shall be provided with heavy duty flexible cords with SO or SJ jackets or equivalent. All lighting equipment shall be used with heavy duty flexible extension cords with 12-3 conductors with SO or SJ jackets or equivalent.

(b) Electrical cords shall have weather tight bodies and caps, 20 amp rated at 120 VAC with appropriately sized plugs and sockets.

(c) Temporary lights that are used in moist, damp, and/or other hazardous locations shall be approved for the purpose.

(d) Temporary lights shall be constructed so that water cannot enter or accumulate in wireways, lampholders or other electrical parts.

(e) Temporary lights that are used in moist and/or other hazardous locations shall have 120 VAC single-phase 15

and/or 20 amp in-line resettable ground fault circuit interrupters.

(f) Temporary lights shall be equipped with a handle and be insulated from heat and possible electrical shock.

(g) Temporary lights shall not be suspended by their electrical cords unless cords and lights are designed and labeled for this means of suspension.

(h) Temporary lights shall be protected by guards of a nonconductive or insulated material to prevent accidental contact with the bulb.

(2) 120 VAC cord reels shall be approved for use in damp or hazardous locations.

(a) Bodies and caps shall be weather tight, 20 amp rated at 120 VAC.

(b) Cords on cord reels that do not exceed 150 feet in length shall be SO or SJ type jackets or equivalent.

(c) Cords that exceed 150 feet in length on reels, shall have 10-3 conductors.

(d) Cord reels that are not permanently mounted on a vehicle shall be insulated from the ground when in use.

(3) Twelve volt portable type hand lanterns shall be constructed of molded composition or other type approved for the purpose.

(a) Portable hand lanterns used in moist and/or other hazardous locations shall be operated at a maximum of 12 volts.

(b) Hand lamps shall be equipped with a handle and a substantial guard over the bulb and attached to the lampholder.

(4) Portable and vehicle-mounted generators.

(a) Portable generators. Under the following conditions, the frame of a portable generator shall not be required to be grounded and shall be permitted to serve as the grounding electrode for a system supplied by the generator:

(i) The generator supplies only equipment mounted on the generator or cord-connected and plug-connected equipment through receptacles mounted on the generator, or both, and

(ii) The noncurrent-carrying metal part of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame.

(b) Vehicle-mounted generators. Under the following conditions, the frame of a vehicle may serve as the grounding electrode for a system supplied by a generator located on the vehicle:

(i) The frame of the generator is bonded to the vehicle frame; and

(ii) The generator supplies only equipment located on the vehicle and/or cord-connected and plug-connected equipment through receptacles mounted on the vehicle or on the generator; and

(iii) The noncurrent-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame.

Additional references: Article 250 National Electrical Code. Chapter 296-24 WAC, Part L.

[Statutory Authority: RCW 49.17.040. 99-05-080, § 296-305-06007, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 96-11-067, § 296-305-06007, filed 5/10/96, effective 1/1/97. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-305-06007, filed 11/30/83; Order 77-20, § 296-305-

06007, filed 10/18/77 and Emergency Order 77-24, filed 11/17/77, effective 12/17/77.]

Chapter 296-307 WAC

SAFETY STANDARDS FOR AGRICULTURE

WAC

296-307-52005	What manufacturer's requirements apply to powered industrial trucks?
296-307-52007	What are the classifications of powered industrial trucks?
296-307-52011	What requirements determine which trucks to use in specific hazardous environments?
296-307-52019	What requirements apply to fuel handling and storage?
296-307-52021	What requirements apply to lighting for operating areas?
296-307-52023	What level of carbon monoxide gas is allowed?
296-307-52029	What are the operator training requirements for powered industrial trucks?
296-307-52030	Is there any additional (nonmandatory) information that may assist me with powered industrial truck operator training?
296-307-52031	What requirements apply to operating powered industrial trucks?
296-307-52039	What requirements apply to traveling in a powered industrial truck?
296-307-52047	What requirements apply to maintaining powered industrial trucks?

WAC 296-307-52005 What manufacturer's requirements apply to powered industrial trucks? (1) All powered industrial trucks in use by an employer must meet the applicable requirements of design, construction and stability as defined by the American National Standards Institute B56.1-1969, Safety Standards for Powered Industrial Trucks, except for vehicles intended primarily for earth moving or over-the-road hauling. All new powered industrial trucks acquired and used by an employer on or after March 1, 2000, must meet the applicable requirements of design, construction and stability as defined in ASME B56.1-1993. The employer must ensure that all powered industrial trucks are inspected, maintained and operated in accordance with this section and the manufacturer's recommendations and specifications.

(2) Approved trucks must have a label indicating approval by the testing laboratory as meeting the specifications and requirements of ANSI B56.1-1969.

(3) Modifications or additions must only be performed with the manufacturer's prior written approval. When modifications or additions are made, capacity, operation, and maintenance instruction plates, tags, or decals must be changed accordingly.

(4) If the truck is equipped with front-end attachments other than factory installed attachments, it must be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with the load centered from side to side.

(5) The user must ensure that all nameplates and markings are in place and legible.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52005, filed 12/21/99, effective 3/1/00. Statutory Authority: RCW 49.17.040. 98-24-096, § 296-307-52005, filed 12/1/98, effective 3/1/99; Recodified as § 296-307-52005. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-22-048, § 296-306A-52005, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52007 What are the classifications of powered industrial trucks? Powered industrial trucks are identified according to the following classifications:

(1) "D" refers to trucks that are diesel engine powered that have minimum safeguards against inherent fire hazards.

(2) "DS" refers to diesel powered trucks that, in addition to meeting all the requirements for the type D trucks, with additional safeguards to the exhaust, fuel, and electrical systems.

(3) "DY" refers to diesel powered trucks that have all the safeguards of the DS trucks; in addition, any electrical equipment is completely enclosed. They are equipped with temperature limitation features.

(4) "E" refers to electrically powered trucks with minimum acceptable safeguards against inherent fire hazards.

(5) "ES" refers to electrically powered trucks that, in addition to all of the requirements for the E trucks, are provided with additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures.

(6) "EE" refers to electrically powered trucks that have, in addition to all of the requirements for the E and ES type trucks, have their electric motors and all other electrical equipment completely enclosed.

(7) "EX" refers to electrically powered trucks that differ from E, ES, or EE type trucks in that the electrical fittings and equipment are so designed, constructed, and assembled to be used in atmospheres containing flammable vapors or dusts.

(8) "G" refers to gasoline powered trucks that have minimum acceptable safeguards against inherent fire hazards.

(9) "GS" refers to gasoline powered trucks with additional safeguards to the exhaust, fuel, and electrical systems.

(10) "LP" refers to liquified petroleum gas-powered trucks that have minimum acceptable safeguards against inherent fire hazards.

(11) "LPS" refers to LP-gas powered trucks that in addition to meeting the requirements for LP trucks, are provided with additional safeguards to the exhaust, fuel, and electrical systems.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52007, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52007. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-22-048, § 296-306A-52007, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52011 What requirements determine which trucks to use in specific hazardous environments?

Following are the minimum truck types required in specific hazardous environments. You may choose to use industrial trucks having greater safeguards. Tables W-1 and W-2 give specific vehicle usage information by Group and Class.

TABLE N-1.1
SUMMARY TABLE ON USE OF INDUSTRIAL TRUCKS IN VARIOUS LOCATIONS

CLASSES (Descriptions of classes)	GROUPS (Examples of locations or atmosphere in classes and groups)				DIVISIONS (Nature of hazardous conditions)		
UNCLASSIFIED	No group designations in Unclassified				No divisions in Unclassified		
Locations not possessing atmospheres as described in other columns.	Piers and wharves inside and outside general storage, general industrial or commercial properties						
CLASS I LOCATIONS Locations in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures.	A	B	C	D	1	2	
	Acetylene	Hydrogen	Ethyl ether	Gasoline Naphtha Alcohols Acetone Lacquer solvent Benzene	Conditions exists continuously, intermittently, or periodically under normal operating conditions.	Condition may occur due to accidentally, for example, due to a puncture of a storage drum.	
CLASS II LOCATIONS Locations which are hazardous because of the presence of combustible dust.	E		F		G	1	2
	Metal dust		Carbon black Coal dust Coke dust		Grain dust Flour dust Starch dust Organic dust	Explosive mixture may be present under normal operating conditions, or where failure of equipment may cause the condition to exist simultaneously with arcing or sparking of electrical equipment, or where dusts of an electrically conducting nature may be present.	Explosive mixture not normally present, but where deposits of dust may cause heat rise in electrical equipment, or where such deposits may be ignited by arcs or sparks from electrical equipment.
CLASS III LOCATIONS Locations where easily ignitable fibers or flyings are present but not likely to be in suspension in quantities sufficient to produce ignitable mixtures.	Class III has no groups				1	2	
	Baled waste, cocoa fiber, cotton, excelsior, hemp, istle, jute, kapok, oakum, sisal, Spanish moss, synthetic fibers, tow.				Locations in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Locations in which easily ignitable fibers are stored or handled (except in the process of manufacture).	

TABLE N-1.2
AUTHORIZED USES OF TRUCKS BY TYPES IN GROUPS OF CLASSES AND DIVISIONS

Groups in classes	UN CLASSIFIED	CLASS I								CLASS II						CLASS III	
		DIV I				DIV II				DIV I			DIV II			DIV I	DIV II
		A	B	C	D	A	B	C	D	E	F	G	E	F	G	None	None
Type of truck authorized:	None																
Diesel:																	
Type D	D** ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type DS .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type DY .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Electric:																	
Type E	E** ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type ES .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type EE .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type EX .....	.....	.....	.....	.....	EX....	.....	.....	.....	.....	.....	EX....	EX....	.....	.....	.....	.....	.....
Gasoline:																	
Type G	G** .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type GS .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	GS
LP-Gas:																	
Type LP	LP** .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type LPS .....	.....	.....	.....	.....	.....	.....	.....	.....	LPS..	.....	.....	.....	.....	.....	.....	.....	LPS

**Trucks conforming to these types may also be used - see subdivision 23007(2)(h) and (j) of this section.

(1) Powered industrial trucks are prohibited in atmospheres with a hazardous concentration of:

- Acetaldehyde,
- Acetylene,
- Butadiene,
- Cyclopropane,
- Diethyl ether,
- Ethylene,
- Ethylene oxide,
- Hydrogen (or gases or vapors equivalent in hazard to hydrogen, such as manufactured gas),
- Isoprene,
- Propylene oxide, or
- Unsymmetrical dimethyl hydrazine (UDMH).

(a) Only approved EX trucks, or other trucks approved by the manufacturer, may be used in atmospheres containing hazardous concentrations of metal dust, including:

- Aluminum, magnesium, and their commercial alloys;
- Other dusts of similarly hazardous characteristics; or
- In atmospheres containing:
 - Carbon black,
 - Coal, or
 - Coke dust.

(b) In atmospheres where dust of magnesium, aluminum or aluminum bronze may be present, fuses, switches, motor controllers, and circuit breakers of trucks must have enclosures specifically approved for such locations.

(2) Only approved EX trucks, or other trucks approved by the manufacturer, may be used in atmospheres containing

- Acetone,
- Acrylonitrile,
- Alcohol,
- Ammonia,
- Benzene,
- Benzol,
- Butane,
- Ethylene dichloride,
- Gasoline,
- Hexane,
- Lacquer solvent vapors,
- Naphtha,
- Natural gas,
- Propane,
- Propylene,
- Styrene,
- Vinyl acetate,
- Vinyl chloride, or
- Xylenes

in quantities sufficient to produce explosive or ignitable mixtures.

(3) Only approved DY, EE, or EX trucks, or other trucks approved by the manufacturer, may be used in locations where volatile flammable liquids or flammable gases are handled, processed or used, if the hazardous liquids, vapors or gases are normally confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown, or in case of abnormal equipment operation.

Only approved DY, EE, or EX trucks, or other trucks approved by the manufacturer, may also be used in locations

in which hazardous concentrations of gases or vapors are normally prevented by mechanical ventilation but that might become hazardous through failure or abnormal operation of the ventilating equipment.

(4) Only approved DS, ES, GS, or LPS trucks, or other trucks approved by the manufacturer, may be used in locations used for the storage of hazardous liquids in sealed containers or liquefied or compressed gases in containers. This classification includes locations where volatile flammable liquids or flammable gases or vapors are used but are hazardous only in case of an accident or an unusual operation condition.

The quantity of hazardous material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved, and the business's history of explosions or fires are all factors that should be considered in determining which truck has sufficient safeguards for the location.

(a) Only approved EX trucks, or other trucks approved by the manufacturer, may be used in atmospheres in which combustible dust is or may be suspended in quantities sufficient to produce explosive or ignitable mixtures, or where mechanical failure or abnormal operation of machinery or equipment might cause such mixtures to be produced.

(b) The EX classification, or other trucks approved by the manufacturer as having equal or greater safeguards, usually includes the working areas of:

- Grain handling and storage plants,
- Rooms containing grinders or pulverizers,
- Cleaners,
- Graders,
- Scalpers,
- Open conveyors or spouts,
- Open bins or hoppers,
- Mixers or blenders,
- Automatic or hopper scales,
- Packing machinery,
- Elevator heads and boots,
- Stock distributors,
- Dust and stock collectors (except all-metal collectors

vented to the outside), and all similar dust producing machinery and equipment in:

- Grain processing plants,
- Starch plants,
- Sugar pulverizing plants,
- Malting plants,
- Hay grinding plants, and other similar locations; and,
- Areas where combustible dust may, under normal

operating conditions, be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

(5) Only approved DY, EE, or EX trucks, or other trucks approved by the manufacturer, may be used in atmospheres in which deposits or accumulations of combustible dust may be ignited by arcs or sparks from the truck, if combustible dust will not normally be suspended or thrown into suspension by the normal operation of equipment or apparatus in quantities sufficient to produce explosive or ignitable mixtures.

(6) Only approved DY, EE, or EX trucks, or other trucks approved by the manufacturer, may be used in locations with

easily ignitable fibers or flyings if the fibers or flyings are not likely to be suspended in quantities sufficient to produce ignitable mixtures.

(7) Only approved DS, DY, ES, EE, EX, GS, or LPS trucks, or other trucks approved by the manufacturer, may be used in locations, including outside storage, where easily ignitable fibers are stored or handled, but are not processed or manufactured. E trucks that have been previously used in these locations may continue to be used.

(8) If storage warehouses and outside storage locations are hazardous, the specified approved truck, or other truck approved by the manufacturer, must be used. If not classified as hazardous, any approved D, E, G, or LP truck, or other truck approved by the manufacturer, may be used, or trucks meeting the requirements for these types may be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52011, filed 12/21/99, effective 3/1/00. Statutory Authority: RCW 49.17.040. 98-24-096, § 296-307-52011, filed 12/1/98, effective 3/1/99; Recodified as § 296-307-52011. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-22-048, § 296-306A-52011, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52019 What requirements apply to fuel handling and storage? (1) You must ensure that liquid fuels such as gasoline and diesel fuel are stored and handled according to NFPA Flammable and Combustible Liquids Code (NFPA No. 30-1996).

(2) You must ensure that LP-gas fuel is stored and handled according to NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58-1998).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52019, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52019. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-22-048, § 296-306A-52019, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52021 What requirements apply to lighting for operating areas? (1) Adequate lighting should be provided in operating areas. (See ANSI Practice for Industrial Lighting, ANSI/IES RP-7 1990.)

(2) Where general lighting is inadequate, directional lighting must be provided on the truck.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52021, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52021. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-22-048, § 296-306A-52021, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52023 What level of carbon monoxide gas is allowed? Concentration levels of carbon monoxide gas created by truck operations must not exceed the levels specified in WAC 296-62-075, Part L (general occupational health standards).

Note: Questions concerning degree of concentration and methods of sampling should be referred to a qualified industrial hygienist.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52023, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52023. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-22-048, § 296-306A-52023, filed 10/31/96, effective 12/1/96.]

[2000 WAC Supp—page 1472]

WAC 296-307-52029 What are the operator training requirements for powered industrial trucks? (1) **Safe operation.**

(a) The employer must ensure that each powered industrial truck operator is trained in the safe operation of a powered industrial truck, and is competent to operate a powered industrial truck safely.

(b) Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer must ensure that each operator has successfully completed the training required by this section.

(2) **Training program implementation.**

(a) Trainees may operate a powered industrial truck only under the direct supervision of persons who have the knowledge, training, and experience to train operators and where such operation does not endanger the trainee or other employees.

Note: The employer, or any other qualified person of the employer's choosing, may give required training and evaluation.

(b) Training must consist of formal instruction and/or practical training, conveyed in a manner that the trainee understands.

Note: Formal instruction may include lecture, discussion, interactive computer learning, video tape and/or written material. Practical training may include demonstrations performed by the trainer and practical exercises performed by the trainee.

(3) **Training program content.** Powered industrial truck operators must receive initial training in the topics that follow, except in topics that the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace.

(a) **Truck-related topics:**

- Operating instructions, warnings and precautions for the types of truck the operator will be authorized to operate;
- Differences between the truck and the automobile;
- Truck controls and instrumentation: Where they are located, what they do, and how they work;
- Engine or motor operation;
- Steering and maneuvering;
- Visibility (including restrictions due to loading);
- Fork and attachment adaption, operation, and use limitations;
- Vehicle capacity;
- Vehicle stability;
- Any vehicle inspection and maintenance that the operator will be required to perform;
- Refueling and/or charging and recharging of batteries;
- Operating limitations;
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

(b) **Workplace-related topics:**

- Surface conditions where the vehicle will be operated;
- Composition of loads to be carried and load stability;
- Load manipulation, stacking, and unstacking;
- Pedestrian traffic in areas where the vehicle will be operated;

- Narrow aisles and other restricted places where the vehicle will be operated;
- Hazardous (classified) locations where the vehicle will be operated;
- Ramps and other sloped surfaces that could affect the vehicle's stability;
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

(4) **Retraining.**

(a) Retraining in relevant topics must be provided to the operator when:

- The operator has been observed to operate the vehicle in an unsafe manner;
- The operator has been involved in an accident or near-miss incident;
- The operator has received an evaluation that reveals that the operator is not operating the truck safely;
- The operator is assigned to drive a different type of truck; or
- The condition in the workplace changes in a manner that could affect safe operation of the truck.

(b) Retraining must be provided to an operator if three years has elapsed since he or she last received training.

(5) **Avoidance of duplicative training.** If an operator has previously received training in a topic specified in subsection (3) of this section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator can provide proof of such training within three years, and the employer can verify operator competency.

(6) **Recordkeeping.** Employers must keep records showing that each operator has been trained or received retraining as required by this section. These records must include the name of the operator, the date of the training or retraining, and the name of the person(s) giving the training or retraining.

(7) **Implementation dates.** The employer must ensure that operators of powered industrial trucks are trained, as appropriate, by the effective date of this section. Employees hired on or after the effective date of this section must be trained and found competent prior to being assigned to operate a powered industrial truck.

(8) **Nonmandatory guidance.** To assist employers in implementing operator training requirements, a nonmandatory appendix has been added as WAC 296-307-52030. This appendix does not add to, alter, or reduce the requirements of this section.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52029, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52029. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-048, § 296-306A-52029, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52030 Is there any additional (non-mandatory) information that may assist me with powered industrial truck operator training? (1) Definitions. The

following definitions may help to explain the principle of stability:

"**Center of gravity**" means the point on an object at which all of the object's weight is concentrated. For symmetrical loads, the center of gravity is at the middle of the load.

"**Counterweight**" means the weight that is built into the truck's basic structure and is used to offset the load's weight and to maximize the vehicle's resistance to tipping over.

"**Fulcrum**" means the truck's axis of rotation when it tips over.

"**Grade**" means the slope of a surface, which is usually measured as the number of feet of rise or fall over a hundred foot horizontal distance (the slope is expressed as a percent).

"**Lateral stability**" means a truck's resistance to overturning sideways.

"**Line of action**" means an imaginary vertical line through an object's center of gravity.

"**Load center**" means the horizontal distance from the load's edge (or the fork's or other attachment's vertical face) to the line of action through the load's center of gravity.

"**Longitudinal stability**" means the truck's resistance to overturning forward or rearward.

"**Moment**" means the product of the object's weight times the distance from a fixed point (usually the fulcrum). In the case of a powered industrial truck, the distance is measured from the point at which the truck will tip over to the object's line of action. The distance is always measured perpendicular to the line of action.

"**Track**" means the distance between the wheels on the same axle of the truck.

"**Wheelbase**" means the distance between the centerline of the vehicle's front and rear wheels.

(2) **General.**

(a) Determining the stability of a powered industrial truck is simple once a few basic principles are understood. There are many factors that contribute to a vehicle's stability: The vehicle's wheelbase, track, and height; the load's weight distribution; and the vehicle's counterweight location (if the vehicle is so equipped).

(b) The "stability triangle," used in most stability discussions, demonstrates stability simply (see Figures 1 and 2).

(3) **Basic principles.**

(a) Whether an object is stable depends on the object's "moment" (see definitions, this section) at one end of a system being greater than, equal to, or smaller than the object's moment at the system's other end. This principle can be seen in the way a seesaw or teeter-totter works: That is, if the product of the load and distance from the fulcrum (moment) is equal to the moment at the device's other end, the device is balanced and it will not move. However, if there is a greater moment at one end of the device, the device will try to move downward at the end with the greater moment.

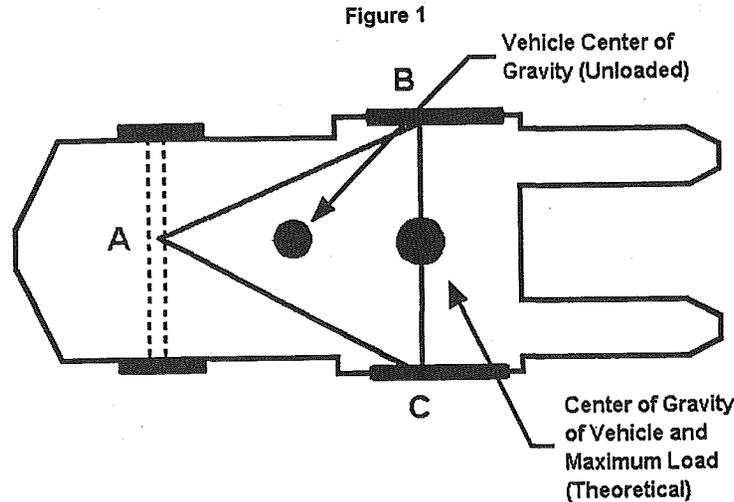
(b) The longitudinal stability of a counterbalanced powered industrial truck depends on the vehicle's moment and the load's moment. In other words, if the mathematic product of the load-moment (the distance from the front wheels, the approximate point at which the vehicle would tip forward) to the load's center of gravity times the load's weight is less than the vehicle's moment, the system is balanced and will not tip

forward. However, if the load's moment is greater than the vehicle's moment, the greater load-moment will force the truck to tip forward.

(4) The stability triangle.

(a) Almost all counterbalanced powered industrial trucks have a three-point suspension system, that is, the vehicle is

supported at three points. This is true even if the vehicle has four wheels. The truck's steer axle is attached to the truck by a pivot pin in the axle's center. When the points are connected with imaginary lines, this three-point support forms a triangle called the stability triangle. Figure 1 depicts the stability triangle.



Notes:

1. When the vehicle is loaded, the combined center of gravity shifts toward line B-C. Theoretically, the maximum load will result in the center of gravity at the line B-C. In actual practice, the combined center of gravity should never be at line B-C.
2. The addition of additional counterweight will cause the truck center of gravity to shift toward point A and result in a truck that is less stable laterally.

(b) When the vehicle's line of action, or load center, falls within the stability triangle, the vehicle is stable and will not tip over. However, when the vehicle's line of action or the vehicle/load combination falls outside the stability triangle, the vehicle is unstable and may tip over.

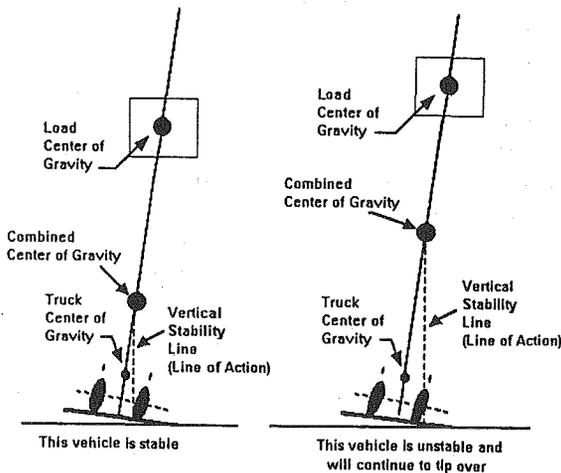


Figure - 2

(5) Longitudinal stability.

(a) The axis of rotation when a truck tips forward is the front wheels' points of contact with the pavement. When a powered industrial truck tips forward, the truck will rotate about this line. When a truck is stable, the vehicle-moment must exceed the load-moment. As long as the vehicle-moment is equal to or exceeds the load-moment, the vehicle

will not tip over. On the other hand, if the load-moment slightly exceeds the vehicle-moment, the truck will begin to tip forward, thereby causing the rear to lose contact with the floor or ground and resulting in loss of steering control. If the load-moment greatly exceeds the vehicle-moment, the truck will tip forward.

(b) To determine the maximum safe load-moment, the truck manufacturer normally rates the truck at a maximum load at a given distance from the front face of the forks. The specified distance from the front face of the forks to the line of action of the load is commonly called the load center. Because larger trucks normally handle loads that are physically larger, these vehicles have greater load centers. Trucks with a capacity of 30,000 pounds or less are normally rated at a given load weight at a 24-inch load center. Trucks with a capacity greater than 30,000 pounds are normally rated at a given load weight at a 36- or 48-inch load center. To safely operate the vehicle, the operator should always check the data plate to determine the maximum allowable weight at the rated load center.

(c) Although the true load-moment distance is measured from the front wheels, this distance is greater than the distance from the front face of the forks. Calculating the maximum allowable load-moment using the load-center distance always provides a lower load-moment than the truck was designed to handle. When handling unusual loads, such as those that are larger than 48 inches long (the center of gravity is greater than 24 inches) or that have an offset center of gravity, etc., a maximum allowable load-moment should be calculated and used to determine whether a load can be safely handled. For example, if an operator is operating a 3,000-pound capacity truck (with a 24-inch load center), the maximum allowable load-moment is 72,000 inch-pounds (3,000 times 24). If a load is 60 inches long (30-inch load center), then the maximum that this load can weigh is 2,400 pounds (72,000 divided by 30).

(6) Lateral stability.

(a) The vehicle's lateral stability is determined by the line of action's position (a vertical line that passes through the combined vehicle's and load's center of gravity) relative to the stability triangle. When the vehicle is not loaded, the truck's center of gravity location is the only factor to be considered in determining the truck's stability. As long as the line of action of the combined vehicle's and load's center of gravity falls within the stability triangle, the truck is stable and will not tip over. However, if the line of action falls outside the stability triangle, the truck is not stable and may tip over. Refer to Figure 3.

(b) Factors that affect the vehicle's lateral stability include the load's placement on the truck, the height of the load above the surface on which the vehicle is operating, and the vehicle's degree of lean.

(7) Dynamic stability.

(a) Up to this point, the stability of a powered industrial truck has been discussed without considering the dynamic forces that result when the vehicle and load are put into motion. The weight's transfer and the resultant shift in the center of gravity due to the dynamic forces created when the machine is moving, braking, cornering, lifting, tilting, and lowering loads, etc., are important stability considerations.

(b) When determining whether a load can be safely handled, the operator should exercise extra caution when handling loads that cause the vehicle to approach its maximum design characteristics. For example, if an operator must handle a maximum load, the load should be carried at the lowest position possible, the truck should be accelerated slowly and evenly, and the forks should be tilted forward cautiously. However, no precise rules can be formulated to cover all of these eventualities.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52030, filed 12/21/99, effective 3/1/00.]

WAC 296-307-52031 What requirements apply to operating powered industrial trucks? (1) No operator may drive a truck up to anyone standing in front of a fixed object.

(2) No one may stand or pass under the elevated portion of any truck, whether loaded or empty.

(3) Employers must not allow people to ride on powered industrial trucks unless a safe place to ride is provided.

(4) Employers must prohibit employees from placing any body parts between the uprights of the mast or outside the running lines of the truck.

(5) When an operator leaves a powered industrial truck unattended:

- (a) The load must be fully lowered;
- (b) The controls must be neutralized;
- (c) The power must be shut off; and
- (d) The brakes must be set.

(e) If the truck is parked on an incline, the wheels must be blocked.

A powered industrial truck is "unattended" when the operator is 25 feet or more away from the vehicle, which remains in view, or whenever the operator leaves the vehicle and it is not in view.

(6) When a truck operator is dismounted, within 25 feet of the truck, and still in view, the load must be fully lowered, the controls must be neutralized, and the brakes must be set to prevent movement.

(7) The operator must maintain a safe distance from the edge of ramps or platforms while operating on any elevated dock, or platform or freight car.

(8) There must be enough headroom for trucks to operate under overhead installations, lights, pipes, sprinkler systems, or other overhead projections.

(9) An active operator protection restraint device (such as a seatbelt or lap-bar) or system must be used, when provided.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52031, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52031. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-048, § 296-306A-52031, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52039 What requirements apply to traveling in a powered industrial truck? (1) The operator must maintain a safe distance of approximately three truck lengths from the truck ahead. The truck must be kept under control at all times.

(2) The operator must yield the right of way to ambulances, fire trucks, or other vehicles in emergency situations.

(3) Passing other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations is prohibited.

(4) Railroad tracks must be crossed diagonally wherever possible. The operator must not park closer than 8 feet from the center of railroad tracks.

(5) The operator must look in the direction of, and keep a clear view of, the path of travel.

(6) Stunt driving and horseplay are prohibited.

(7) The operator must approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, the operator must neutralize controls, shut off power, and set the brakes.

(8) Motorized hand trucks must enter elevator or other confined areas with load end forward.

(9) The operator must avoid running over loose objects on the roadway surface.

(10) Access to fire aisles, stairways, and fire equipment must be kept clear.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52039, filed 12/21/99, effective 3/1/00; Recodified as § 296-307-52039. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-048, § 296-306A-52039, filed 10/31/96, effective 12/1/96.]

WAC 296-307-52047 What requirements apply to maintaining powered industrial trucks? (1) Powered industrial trucks must be removed from service when not in safe operating condition. All repairs must be made by an authorized employee.

(2) No repairs may be made in Class I, II, and III locations.

(3) When repairs to fuel and ignition systems of industrial trucks involve fire hazards, the repairs must be conducted only in designated locations.

(4) Trucks in need of repairs to the electrical system must have the battery disconnected prior to repair.

(5) Industrial truck parts must be replaced only by parts of equivalent safety.

(6) Industrial trucks must not be altered so that the relative positions of parts are different from when they were manufactured. Industrial trucks must not have parts added or eliminated, except as provided in WAC 296-307-52005. Fork trucks must not have additional counterweighting added unless approved by the truck manufacturer.

(7) Industrial trucks must be examined at least daily before being placed in service. Industrial trucks must not be placed in service if the examination shows any unsafe condition.

Where industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects must be immediately reported and corrected.

(8) Water mufflers must be filled daily or as frequently as necessary to prevent the water supply from dropping below 75 percent. Vehicles must not be operated if muffler screens or other parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system must immediately be removed from service until the emission of such sparks and flames has been eliminated.

(9) When the temperature of any part of any truck exceeds its normal operating temperature, the vehicle must be removed from service until the cause for overheating has been eliminated.

(10) Industrial trucks must be kept clean and free of excess accumulations of combustible materials, oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100°F) solvents must not be used. High flash point (at or above 100°F) solvents may be used. Take precautions regarding toxicity, ventilation, and fire hazard according to the agent or solvent used.

(11) Industrial trucks originally approved to use gasoline fuel may be converted to use LP-gas fuel if the converted truck has the features specified for LP or LPS designated trucks. The converted equipment must be approved. You may find a description of the conversion system and the recommended method of installation in the "listed by report" of a nationally recognized testing laboratory.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-307-52047, filed 12/21/99, effective 3/1/00. Statutory Authority: RCW 49.17.040. 98-24-096, § 296-307-52047, filed 12/1/98, effective 3/1/99; Recodified as § 296-307-52047. 97-09-013, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-048, § 296-306A-52047, filed 10/31/96, effective 12/1/96.]

Chapter 296-400A WAC
CERTIFICATION OF COMPETENCY FOR
JOURNEYMAN PLUMBERS
 (Formerly chapter 296-400 WAC)

WAC
 296-400A-045 What fees will I have to pay?

WAC 296-400A-045 What fees will I have to pay? The following are the department's plumbers fees:

<u>Type of Fee</u>	<u>Period Covered by Fee</u>	<u>Dollar Amount of Fee</u>
Examination application	Per examination	\$108.25
Reciprocity application	Per application	\$108.25
Trainee certificate*	One year	\$32.50
Trainee certificate	Less than one year	\$3.00 per month with a minimum fee of \$21.50
Temporary permit	90 days	\$54.00
Journeyman or specialty certificate**	Two years	\$86.75
Journeyman or specialty certificate	Less than two years	\$3.50 per month with a minimum fee of \$32.50
Medical gas endorsement examination application***	Per application	\$40.00
Medical gas endorsement**	One year	\$30.00
Medical gas endorsement	Less than one year	\$2.50 per month with a minimum fee of \$17.50
Medical gas endorsement examination fee***		See note below.
Medical gas endorsement training course fee****		See note below.
Reinstatement of a journeyman certificate		\$173.50
Replacement of all certificates		\$32.50

* The trainee certificate shall expire one year from the date of issuance and be renewed on or before the date of expiration.

** This fee applies to either the original issuance or a renewal of a certificate. If you have passed the plumbers certificate of competency examination or the medical gas piping installer endorsement examination and paid the certificate fee, you will be issued a plumber certificate of competency or a medical gas endorsement that will expire on your birthdate.

*** This fee is paid directly to a nationally recognized testing agency under contract with the department. It covers the cost of preparing and administering the written competency examination and the materials necessary to conduct the practical competency examination required for the medical gas piping system installers endorsement. **This fee is not paid to the department.**

**** This fee is paid directly to a training course provider approved by the department, in consultation with the state advisory board of plumbers. It covers the cost of providing training courses required for the medical gas piping system installer endorsement. **This fee is not paid to the department.**

If your birth year is:

(1) In an even-numbered year, your certificate will expire on your birthdate in the next even-numbered year.

(2) In an odd-numbered year, your certificate will expire on your birthdate in the next odd-numbered year.

[Statutory Authority: RCW 18.106.125, 99-07-101, § 296-400A-045, filed 3/23/99, effective 4/23/99. Statutory Authority: Chapter 18.106 RCW. 98-13-126, § 296-400A-045, filed 6/17/98, effective 7/20/98. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-400A-045, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 18.106.050, [18.106.]070, [18.106.]110, [18.106.]125, [18.106.]140 and [18.106.]270. 97-11-052, § 296-400A-045, filed 5/20/97, effective 6/30/97.]

Chapter 296-401A WAC

CERTIFICATION OF COMPETENCY FOR JOURNEYMAN ELECTRICIANS

WAC

296-401A-100	Certificate of competency required.
296-401A-140	Electrical specialties.
296-401A-530	Trainees working without supervision.
296-401A-700	Fees for certificates of competency, examination and reciprocity.

WAC 296-401A-100 Certificate of competency required. Who can work in the electrical construction trade?

Those who can work in the electrical construction trade are persons who hold the following certificates obtained through proper application that includes the individual's Social Security number, date of birth, and mailing address to the department who:

- (1) Possess a current journeyman electrician certificate of competency issued by the department; or
- (2) Possess a current specialty electrician certificate of competency issued by the department; or
- (3) Possess a valid temporary permit; or
- (4) Possess a current electrical trainee certificate and are enrolled in an electrician's apprenticeship program approved under chapter 49.04 RCW, and are learning the trade under the supervision of a certified journeyman; or
- (5) Possess a current electrical trainee certificate and are learning the trade under the supervision of a certified journeyman electrician or certified specialty electrician working in their specialty.

[Statutory Authority: Chapter 19.28 RCW. 99-05-052, § 296-401A-100, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-401A-100, filed 5/29/98, effective 6/30/98.]

WAC 296-401A-140 Electrical specialties. Can I obtain a certificate of competency for an electrical specialty?

The department issues specialty electricians' certificates of competency in the following areas of electrical work:

- (1) **Residential certificate (02):** This certificate limits you to wiring one-family and two-family dwellings, or multi-family dwellings that do not exceed three floors above grade. All residential wiring, except service and feeder wiring, must be nonmetallic sheathed cable. **This certificate does not**

allow you to wire commercial occupancies such as motels, hotels, offices or stores.

(2) **Pump and irrigation certificate (03):** This certificate limits you to wiring the electrical connection of domestic water pumps, irrigation pumps, circular irrigating systems and related pumps and pump houses. With this certificate, you may also install the circuits, feeders, controls and services necessary to supply electricity to the pumps.

(3) **Domestic well specialty electrical technician certificate (03A):** This certificate limits you to the installation of materials, wires and equipment providing electrical power, control and operation of domestic water pumping systems. In addition, you are limited to the extension of a branch circuit (which has been supplied and installed by others) to pump controllers, pressure switches, alarm sensors, and water pumps which do not exceed 7 and 1/2 horsepower at 230 volts AC single phase.

Prior to December 1, 1998, you will be eligible to take the domestic well specialty electrician's competency examination if you provide the department with notarized verification of at least four years prior experience installing domestic water systems, including pump installations, under the supervision of a firm engaged in the business of installing domestic water systems.

After December 1, 1998, you will be eligible to take the domestic well specialty electrician's competency examination **only if** you provide the department with notarized verification of two years experience installing domestic pump systems working under the direct supervision of a domestic well specialty technician, a pump and irrigation specialty electrician or a journeyman electrician.

Certification of domestic well specialty electrical technicians shall be according to the provisions of WAC 296-401A-105 (original certification) and WAC 296-401A-110 (renewal of certification).

(4) **Signs and outline lighting certificate (04):** This certificate limits you to placing signs and outline lighting and connecting them to their electrical supply, controls and related circuit extensions. You are further limited to the installation of a maximum 60 ampere, 120/240 volt, single phase service supplying power to a remote sign.

(5) **Domestic appliance certificate (05):** This certificate limits you to electrically connecting and wiring domestic appliances such as hot water heaters, ranges, dishwashers, clothes dryers, oil and gas furnaces and similar appliances. You may also install the circuits to those domestic appliances. However, **you may not** install service or feeder wires or circuits to electrical furnaces and heat pump equipment.

(6) **Limited energy system certificate (06):** This certificate limits you to installing signaling circuits, power limited circuits and related equipment. Examples of such equipment would be fire protection signaling systems, intrusion alarms, nonutility owned communication systems and similar low energy circuits and equipment.

(7) **HVAC/refrigeration limited energy technician (06A):** This certificate limits you to installing low voltage, Class 2 HVAC/refrigeration control circuit cables for control of furnaces, heat pumps, and similar HVAC or refrigeration equipment when such conductors do not connect to other

than HVAC or refrigeration equipment and when such buildings do not exceed three floors above grade, except for residential occupancies. Associated limited energy control components that are integral with, and control the operation of, the heating and cooling equipment or refrigeration equipment are included in the scope of this specialty. These limited energy components include, but are not limited to, the following: Thermostats, humidistats, low voltage damper controls, outdoor sensing controls, outside air dampers, stand-alone duct smoke detectors, zone control valves, and the mounting of HVAC/refrigeration control panels and low voltage connections only. Installation of integrated energy management systems other than HVAC/refrigeration systems as defined herein, are **not** included in this specialty.

HVAC/refrigeration limited energy technicians may install, service, maintain, repair, or replace HVAC/refrigeration electrical systems as long as the work is on the HVAC/refrigeration system itself. HVAC/refrigeration technicians may replace line voltage components within the equipment, only if the components are like in kind with identical voltage and current ratings. HVAC/refrigeration technicians may **not** install branch circuit (line voltage) conductors, services, feeders, panelboards, or disconnect switches to HVAC/refrigeration equipment. Short sections of raceway may be installed for access to or physical protection of cables, however wiring in conduit systems and wiring in classified locations are excluded from this specialty.

To qualify to take this certificate examination on or before March 1, 2000, you must provide proof to the department that you performed HVAC or refrigeration equipment installation, service or repair and you were employed for a minimum of two years by a contractor engaged full time in the business of HVAC or refrigeration equipment installation or repair work. Individuals that meet this requirement will qualify for a third year training certificate and be considered temporarily until March 1, 2002, an HVAC/refrigeration limited energy technician for the purposes of working within the scope of this specialty without supervision and for the purpose of supervising first and second year trainees in proper ratio. After March 1, 2002, you must have successfully passed the certificate examination to perform this work without supervision or to supervise trainees. If you have less than two years of experience, on or before March 1, 2000, you may apply for a training certificate level comparable to the hours for which you can provide proof of experience.

After March 1, 2000, all applicants for this certificate examination must have a minimum of two years full-time experience under the direct supervision of an HVAC/refrigeration limited energy technician, or a limited energy specialty electrician, or a journeyman electrician. Trainees may work unsupervised during their second year when installing HVAC systems with controls consisting of a single thermostat in one and two family dwelling units only.

(8) Nonresidential maintenance certificate (07): This certificate limits you to maintaining, repairing and replacing electrical equipment and conductors on industrial or commercial premises. **You may not** conduct maintenance activities in hotels, motels or dwelling units.

(9) Nonresidential lighting maintenance and lighting retrofit technician (07A): This certificate limits you to working within the housing of existing nonresidential lighting fixtures **and** limits you to work related to repair, service, maintenance of lighting fixtures and the installation of energy efficiency upgrades. Your work may include the replacement of lamps, ballasts, sockets and the installation of listed lighting retrofit reflectors and kits. Your work must be limited to the fixture body, however, you may replace or retrofit remote located ballasts with approved products. **You may not** install new fixtures or branch circuits, move or relocate existing fixtures, or alter existing branch circuits.

To qualify for this certificate **on or before June 30, 1999**, you must provide proof to the department that you performed electrical lighting maintenance and lighting retrofit installations and you were employed for a minimum of two years by a contractor engaged full-time in the business of nonresidential lighting maintenance and lighting retrofit work. **After June 30, 1999**, all applicants for this certificate must have a minimum of two years full-time experience under the direct supervision of a nonresidential lighting maintenance and retrofit technician; or a nonresidential maintenance specialty electrician; or a journeyman electrician.

[Statutory Authority: Chapter 19.28 RCW, 99-05-052, § 296-401A-140, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-401A-140, filed 5/29/98, effective 6/30/98.]

WAC 296-401A-530 Trainees working without supervision. *Can I work as a trainee without supervision?*

After review by the department, you may be issued a six-month, nonrenewable unsupervised electrical training certificate that will allow you to work without supervision if you:

- (1) Apply for an unsupervised electrical training certificate; **and**
- (2) Have worked over 7,000 hours; **and**
- (3) Have successfully completed or are currently enrolled in an approved apprenticeship program or an electrical construction trade program in a school approved by the board of community and technical colleges; **and**
- (4) Pay the fee listed in WAC 296-401A-700; **and**
- (5) Are currently working for and must continue to work for a licensed electrical contractor that employs at least one certified journeyman or specialty electrician on staff.
- (6) HVAC/refrigeration limited energy technician trainees may work unsupervised during their second year when installing HVAC systems with controls consisting of a single thermostat in one and two family dwelling units only.

[Statutory Authority: Chapter 19.28 RCW, 99-05-052, § 296-401A-530, filed 2/12/99, effective 3/15/99; 98-12-042, § 296-401A-530, filed 5/29/98, effective 6/30/98.]

WAC 296-401A-700 Fees for certificates of competency, examination and reciprocity. *How much do I pay for a journeyman, specialty, or training certificate, competency examination, or reciprocity?*

When you apply to take a competency examination or to obtain a certificate of competency, you must pay the appropriate fee listed below.

Type of Certificate	Fee
(1) Journeyman or specialty electrician certificate renewal (per 36-month period)	\$ 64.50
(2) Late renewal of journeyman or specialty electrician certificate (per 36-month period)	\$ 130.00
(3) Journeyman or specialty electrician examination application (nonrefundable)	\$ 27.00
(4) Journeyman or specialty electrician original certificate	\$ 42.50
(5) Training certificate (expires one year after purchase)	\$ 20.75
(6) Training certificate renewal or update of hours	\$ 20.75
(7) Unsupervised electrical training certificate	\$ 20.75
(8) Journeyman or specialty electrician test or retest	\$ 50.75
(9) Reciprocal journeyman or specialty certificate	\$ 69.50
(10) Reinstatement of journeyman or specialty certificate	\$ 20.75
(11) Continuing education course submittal and approval, per course	\$ 41.50
(12) Continuing education course renewal, per course	\$ 20.75
(13) Refund processing fee	\$ 10.50
All requests for refunds will be assessed a processing fee	\$ 10.50

Note: Failure to appear for an examination results in forfeiture of the examination fee.

[Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-401A-700, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapter 19.28 RCW. 98-12-042, § 296-401A-700, filed 5/29/98, effective 6/30/98.]

Title 308 WAC

LICENSING, DEPARTMENT OF

(Formerly: Motor Vehicles, Dept. of and Licenses, Dept. of)

Chapters

- 308-10 Public records disclosure.
- 308-12 Architects.
- 308-13 Board of registration for landscape architects.
- 308-19 Bail bond agencies and bail bond agents.
- 308-21 Athlete agent registration.
- 308-32 Debt adjusters.
- 308-48 Funeral directors and embalmers.
- 308-56A Certificates of title—Motor vehicles, etc.
- 308-57 Motor vehicle excise tax.
- 308-61 Unauthorized and abandoned vehicles.
- 308-66 Motor vehicle dealers and manufacturers.
- 308-78 Aircraft fuel tax.
- 308-91 Reciprocity and proration.
- 308-93 Vessel registration and certificates of title.
- 308-94 Snowmobiles and off-road and nonhighway vehicles.
- 308-94A Off-road and nonhighway vehicles.
- 308-96A Vehicle licenses.
- 308-100 Drivers' licenses—Special provisions.
- 308-104 Drivers' licenses.
- 308-124 Real estate brokers and salespersons—General provisions.
- 308-124A Real estate—Licensing and examination.
- 308-124B Real estate—Broker's office.

- 308-124C Real estate—Records and responsibilities.
- 308-124D Real estate—Operational procedures.
- 308-124F Real estate—Miscellaneous provisions.
- 308-125 Real estate appraisers.
- 308-129 Sellers of travel.
- 308-330 Washington model traffic ordinance.
- 308-400 Standardized filing forms and procedures—Uniform Commercial Code, crop liens, and processor and preparer liens for agricultural dairy and commercial fish products and certain federal liens.
- 308-410 Uniform Commercial Code field access.

Chapter 308-10 WAC

PUBLIC RECORDS DISCLOSURE

WAC

- 308-10-010 Definitions.
- 308-10-045 Copying.

WAC 308-10-010 Definitions. (1) The definitions set forth in RCW 42.17.020 shall apply to this chapter.

(2) The "department of licensing" is the agency created pursuant to chapter 46.01 RCW. The department of licensing shall hereinafter be referred to as the department. Where appropriate, the term department also refers to the staff and employees of the department of licensing.

(3) "Director" means the director of the department of licensing as appointed by the governor pursuant to RCW 46.01.090.

(4) "Raw data" means facts, symbols, or observations which have all of the following characteristics:

- (a) They have not been processed, edited or interpreted.
- (b) They are unevaluated and unorganized.
- (c) The fact, symbol, or observation does not, of itself, impart meaning to a potential user or fulfill a recognized need.

(d) To be useable the fact, symbol, or observation must go through some transformation process.

(5) "Information" means raw data that are organized, evaluated and interpreted to impart meaning to potential users and fulfill a recognized need.

(6) "Listing (list)" means an item-by-item series of names, figures, words or numbers written or printed one after the other.

(7) "Tabulation" means the systematic arrangement of facts, statistics, and similar information, except the names of individuals, in column or table format.

(8) "Individual" means a natural person.

(9) "Commercial purpose" means using or intending to use information for the purpose of facilitating a profit expecting business activity.

(10) "Profession," when applied to department records, or the release of department record information, means any state regulated business, profession or occupation administered by the assistant director, business and professions division.

[Statutory Authority: RCW 46.01.110, 99-17-031, § 308-10-010, filed 8/11/99, effective 9/11/99. Statutory Authority: RCW 42.17.250, 96-05-036, § 308-10-010, filed 2/15/96, effective 3/17/96; 92-09-107, § 308-10-