director shall not purchase or sell or permit any member of his or her immediate family to purchase or sell any "other investment," without the prior approval of the audit committee of the board. No member of the board shall or shall permit any member of his or her immediate family to purchase or sell any "other investment," without the prior approval of the audit committee of the board.

(f) No employee of the board or board member shall participate in an LBO or venture capitol IPO of which the board has an interest until such shares are available to the general public.

(3) No board member or employee shall participate in any discussion or shall vote in a matter before the board which involves a business, contract, property, or other substantial investment directly or indirectly held by such person if it is reasonably foreseeable that board action on the matter would confer a benefit to such person by or through the business, contract, property, or investment.

(4) No board member or employee shall participate in any discussion or shall vote in a matter before the board if such participation is motivated by something other than the best interests of the board, its members and beneficiaries, in violation of that person's duty of loyalty.

(5) No board member or employee shall borrow from investment managers, outside service providers, professional advisors or consultants, banks, or other financial institutions with which the board has a business relationship, except and unless such entities are normally engaged in such lending in the usual course of their business, and then only on terms offered to others under similar circumstances.

(6) Confidential information shall be used solely for the board's purposes and under no circumstances revealed to unauthorized persons, except as may be otherwise required to be disclosed as a public record pursuant to the requirements of chapter 42.17 RCW.

(7) No board member or employee shall divulge state agency or board information or proprietary information in the board's possession, whether labeled confidential or not, to any unauthorized person or in advance of the time prescribed for its authorized issuance, or otherwise making use of, or permitting others to make use of, information not available to the general public.

(8) No board member or employee shall use his or her position or employment with the board, or use board facilities, equipment, or supplies, to obtain or attempt to obtain private gain or advantage, especially if a detriment to the board will result.

(9) No board member or employee shall use his or her position or employment with the board, or use board facilities, equipment, or supplies, to assist another in a transaction involving the board, or use his or her influence over the board to obtain or attempt to obtain gain or advantage for the person or entity seeking to transact business with the board.

(10) No member of the board or its staff shall, within a period of two years after termination of such service or employment, appear before the board or receive compensation for any services rendered for or on behalf of any person, firm, corporation, or association in relation to any case, proceeding, or application with respect to which such person was directly concerned and in which that person personally participated during the period of his or her service or employment.

(11) No member of the board or its staff shall accept employment or engage in business or professional activity which he or she might reasonably expect would require or induce him or her to disclose confidential information acquired by him or her by reason of his or her official position.

(12) No member of the board or its staff shall have an account with an institutional salesman serving the state.

(13) A board member or employee who is found by the board to have violated this code of conduct may be subject to official reprimand by vote of the board. In the event that the board determines a violation of the code to be so egregious or apparent as to constitute malfeasance, misfeasance, inefficiency, neglect of duty, incapacity, or unfitness to perform his or her fiduciary duties and responsibilities in the exclusive interest of the board and its beneficiaries, and if the offending person is:

(a) A voting board member: The board, in its sole discretion, may refer the matter to the proper appointing authority or the attorney general, as deemed appropriate; or if

(b) A nonvoting board member: The board, in its sole discretion, may take the appropriate steps necessary to and remove the offending member from the board; or if

(c) The executive director: The board, in its sole discretion, may take the appropriate steps to remove the director in compliance with RCW 43.33A.100; or if

(d) An employee of the board governed by the Merit Systems Rules: The executive director may take such disciplinary action as authorized under Title 356 WAC up to and including termination of employment; or if

(e) An exempt employee of the board: The executive director may take whatever disciplinary action deemed appropriate, up to and including termination of employment.

[Statutory Authority: RCW 43.33A.110. 93-04-008, § 287-04-031, filed 1/22/93, effective 2/22/93.]

# Title 296 WAC
# LABOR AND INDUSTRIES, DEPARTMENT OF

**Chapters**

## Chapter 296-04 WAC
## INTERNAL RULES—STATE APPRENTICESHIP AND TRAINING COUNCIL

WAC



**WAC 296-04-270 Apprenticeship agreements—Types—Standards—Registration, review, cancellation, reregistration—Certificate of completion.** (1) The following apprenticeship agreements shall be recognized pursuant to RCW 49.04.060:

(a) A written agreement between an association of employers and an organization of employees describing the conditions of training for apprentices.

(b) A written statement of an employer or a written agreement between an employer and an employee organization describing the conditions of training apprentices. The former agreement shall be recognized only if there is no bona fide employee organization in the plant affected by the agreement.

(c) A written agreement between an employer and an individual apprentice describing the conditions of apprenticeship.

(2) Apprenticeship agreements shall conform to the following standards:

(a) Committee programs, plant programs, and on-the-job training programs must contain the provisions required by RCW 49.04.050 and, in addition, shall contain:

(i) Provision for nondiscrimination in the selection of apprentices in substantially the following form:

Each sponsor of an apprenticeship program shall include in its standards the following equal opportunity pledge: "The recruitment, selection, employment and training of apprentices during their apprenticeship shall be without discrimination because of race, color, religion, national origin, or sex. The sponsor will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required by the rules of the Washington state apprenticeship and training council and Title 29, Part 30 of the Code of Federal Regulations."

(ii) Provision that there shall be no discrimination on the basis of race, color, creed, sex, or national origin after selection during all phases of employment during apprenticeship.

(iii) Provision that adequate records of the selection process must be kept for a period of at least five years and will be made available to the council or its designated representative on request. Such records must include a brief summary of any interviews and the conclusions reached on each of the specific factors which are part of the total judgment concerning each applicant.

(iv) Provision for local committee rules and regulations consistent with these rules and the applicable apprenticeship agreement.

(b) Any proposed standards for apprenticeship must be consistent with any standards for apprenticeship already approved by the council for the industry, craft or trade in question to the end that there is general statewide uniformity of such standards in each industry, trade or craft. Proposed standards shall be considered consistent if they are designed to achieve the same levels of skills as existing standards within the state for that industry, trade, or craft.

(c) Shall contain a statement of the progressively increasing scale of wages.

(d) A sample apprenticeship agreement which the council approves is available on request from the supervisor.

(3) Registration, review, cancellation, reregistration.

(a) All individual agreements shall be registered with the supervisor and subject to his approval.

(b) The supervisor and his staff, in the performance of their field work, shall conduct a systematic review of all plant and committee programs and shall take appropriate action, including recommendation of cancellation, when they find that any program is not being operated according to these rules and regulations or according to its applicable standards.

(c) When any program is found to be operating in a manner inconsistent with or contrary to these rules and regulations or its established plant or committee program, the supervisor shall notify the offending committee, person, firm

or agency of the violation. If the supervisor does not receive notice, within 60 days, of action taken to correct such violations, the supervisor may take whatever action he deems necessary, including recommendation of cancellation of the apprenticeship or training program and agreement to the council.

(d) If the supervisor deems it necessary to recommend cancellation of an apprenticeship or training program, he shall do so in writing to each council member, stating in detail the reasons for his recommendation. A copy of said recommendation shall be mailed to the last known address of each member of the committee administering said program, or to those persons responsible for said program, together with notice that the council shall consider the recommendation at its next regularly scheduled meeting more than 30 days subsequent to the date of the recommendation and that all interested persons may present evidence or testimony regarding said recommendation. The council shall decide the question before it upon majority vote of the members present and voting and shall notify all interested parties of its decision, together with the reasons for it, in writing.

(e) The cancellation of any program or agreement shall automatically effect a cancellation of any agreement registered thereunder, provided that any organization or firm not responsible for the violations causing the cancellation may petition the council for approval of such cancelled agreement or program as a new program.

(f) Certificates of completion shall be issued at the request of the appropriate committee. An affidavit of the secretary of the committee concerned shall accompany the request, which affidavit shall state that the apprentice has successfully completed the apprenticeship program of that committee, and that he has been an active, registered participant of that committee's program for at least six months.

[Statutory Authority: RCW 49.04.010. 93-04-100, § 296-04-270, filed 2/2/93, effective 3/5/93. Statutory Authority: RCW 49.04.010 and 49.04.050. 90-10-020, § 296-04-270, filed 4/23/90, effective 5/24/90. Statutory Authority: RCW 49.04.050. 87-01-046 (Order 86-43), § 296-04-270, filed 12/15/86. Statutory Authority: RCW 49.04.010. 80-03-004 (Order 80-2), § 296-04-270, filed 2/8/80; Order 76-4, § 296-04-270, filed 2/20/76; Order 71-3, § 296-04-270, filed 3/25/71; § XXVI, filed 10/11/65; § XXVI, filed 2/12/65.]

**WAC 296-04-280 On-the-job training programs.** (1) Training programs may be set up in the same manner as apprenticeship programs, with any exceptions authorized by the council provided that no on-the-job training program shall be established or authorized where there is a parallel apprenticeship program in existence. A training program shall be any program which requires 2,000 or less hours of employment for completion. All of these rules shall apply to them as to apprenticeship agreements and programs, except that they will be approved by the supervisor subject to the review of the council.

(2) A pattern standard for an on-the-job training program is available from the supervisor on request.

[Statutory Authority: RCW 49.04.010. 93-04-100, § 296-04-280, filed 2/2/93, effective 3/5/93; Order 76-4, § 296-04-280, filed 2/20/76; Order 71-3, § 296-04-280, filed 3/25/71.]

# Chapter 296-14 WAC
# INDUSTRIAL INSURANCE

WAC



## DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

| | |
|---|---|
| 296-14-950 | Appointment of attorney as special assistant. [Statutory Authority: RCW 51.24.110. 88-08-026 (Order 88-03), § 296-14-950, filed 3/31/88.] Repealed by 93-23-060, filed 11/15/93, effective 1/1/94. Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. |
| 296-14-960 | Limitations of appointment. [Statutory Authority: RCW 51.24.110. 88-08-026 (Order 88-03), § 296-14-960, filed 3/31/88.] Repealed by 93-23-060, filed 11/15/93, effective 1/1/94. Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. |

**WAC 296-14-350 Claim allowance and wage determination in occupational disease cases.** (1) The liable insurer in occupational disease cases is the insurer on risk at the time of the last injurious exposure to the injurious substance or hazard of disease during employment within the coverage of Title 51 RCW which gave rise to the claim for compensation. Such Title 51 RCW insurer shall not be liable, however, if the worker has a claim arising from the occupational disease that is allowed for benefits under the maritime laws or Federal Employees' Compensation Act.

(2) The compensation schedules and wage base for claims shall be based on the schedule in effect on the date of disease manifestation. Compensation shall be based on the monthly wage of the worker as follows:

(a) If the worker was employed at the time the disease required medical treatment or became totally or partially disabling, whichever occurred first, compensation shall be based on the monthly wage paid on that date regardless of whether the worker is employed in the industry that gave rise to the disease or in an unrelated industry.

(b) If the worker was not employed, for causes other than voluntary retirement, at the time the disease required medical treatment or became totally or partially disabling, whichever occurred first, compensation shall be based upon the last monthly wage paid.

(3) Benefits shall be paid in accordance with the schedules in effect on the date of manifestation. Manifestation is the date the disease required medical treatment or became totally or partially disabling, whichever occurred first, without regard to the date of the contraction of the disease or the date of filing the claim.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-14-350, filed 11/15/93, effective 1/1/94. Statutory Authority: Chapters 51.08 and 51.32 RCW. 88-14-011 (Order 88-13), § 296-14-350, filed 6/24/88.]

**WAC 296-14-420 Payment of benefits—Aggravation reopening/new injury.** (1) Whenever an application for benefits is filed where there is a substantial question whether benefits shall be paid pursuant to the reopening of an accepted claim or allowed as a claim for a new injury or occupational disease, the department shall make a determination in a single order. Where one of the claims is with a self-insured employer and another is with a state fund employer, such determination shall be made jointly by the program managers for claims administration and self insurance, or their respective designees.

(2) Pending entry of the order, benefits shall be paid promptly by the entity which would be responsible if the claim were determined to be a new injury or occupational disease.

(3) The department is required to act under this rule only if:

(a) There is substantial evidence that the worker will be determined to be entitled to benefits on one of the claims; and

(b) There is uncertainty regarding which of the entities is responsible.

(4) Time-loss compensation shall be paid at the lesser of the two entitlements that may apply to the claim until responsibility has been determined between state fund and self-insured employer, two self-insured employers, or two state fund employers.

(5) If, upon final determination of the responsible insurer, the entity that paid benefits under subsection (2) of this section is determined not to be responsible for payment of benefits, such entity shall be reimbursed by the responsible entity for all amounts paid.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-14-420, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.32.110 and 51.32.190(6). 90-19-028, § 296-14-420, filed 9/12/90, effective 10/13/90.]

**WAC 296-14-900 Purpose.** WAC 296-14-900 through 296-14-940 implement RCW 51.12.102 and 51.24.110, which authorizes the department to use special assistant attorneys general.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-14-900, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.24.110. 88-08-026 (Order 88-03), § 296-14-900, filed 3/31/88.]

**WAC 296-14-910 Definitions.** In WAC 296-14-900 through 296-14-940:

"Department" means the department of labor and industries.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-14-910, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.24.110. 88-08-026 (Order 88-03), § 296-14-910, filed 3/31/88.]

**WAC 296-14-930 Application by attorneys.** (1) An attorney who meets the qualification criteria may seek inclusion on the list of attorneys by filing an application with the department. Application forms may be obtained from the office of the attorney general, the Washington State Bar Association, or the department.

(2) The application form shall be prepared by the department in consultation with the office of the attorney general. The application shall require the applicant to declare under penalty of perjury that the information is true and shall require the applicant to inform the department and the attorney general of any changes in his or her qualifications.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-14-930, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.24.110. 88-08-026 (Order 88-03), § 296-14-930, filed 3/31/88.]

**WAC 296-14-940 List of attorneys.** (1) The department shall determine from the application and from other sources whether an attorney meets the criteria of WAC 296-14-920. The department may consult with the Washington State Bar Association and the office of the attorney general if necessary to make the determination.

(2) The department shall compile and maintain the lists of attorneys from which the attorney general may select special assistant attorneys general to represent the department.

(3) The department shall, once every year, provide the attorney general and the Washington State Bar Association with a current copy of the lists of the attorneys.

(4) RCW 51.12.102, 51.24.110 and WAC 296-14-900 through 296-14-940 do not give the attorneys on the special assistant attorney general lists any right to any expectation of employment as a special assistant attorney general and/or assistant attorney general.

(5) The designation "special assistant attorney general" shall not be used by a private attorney on any correspondence or pleadings relating to services, nor shall they refer to themselves as such other than as necessary to show their authority in a specific case to represent the department.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-14-940, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.24.110. 88-08-026 (Order 88-03), § 296-14-940, filed 3/31/88.]

**WAC 296-14-950 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-14-960 Repealed.** See Disposition Table at beginning of this chapter.

## Chapter 296-15 WAC
## WORKERS' COMPENSATION SELF-INSURANCE RULES AND REGULATIONS

WAC



**WAC 296-15-022 Corporate guarantee.** If an applicant for self-insurance certification is a subsidiary, the parent firm shall furnish the department with its guarantee to assume and be responsible for the workers' compensation

liabilities of the subsidiary in the event the subsidiary firm is unable or unwilling to cover these liabilities. If a self-insurer is purchased by another firm, which becomes its parent, the parent shall provide the department with its most recent audited financial statement and its guarantee. This guarantee is to be on a form provided by the department. For the purposes of this rule, a parent firm is defined as one which owns fifty percent, and/or has a controlling interest in, another firm which shall be considered to be a subsidiary. Failure by a parent to provide a guarantee for its self-insured subsidiary will result in the surety requirement of the subsidiary being established at one hundred twenty-five percent of what would otherwise be required as specified in WAC 296-15-030. Surety at the level of one hundred twenty-five percent of the normal requirement will continue to be required as long as no parental guarantee has been provided.

[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.]

**WAC 296-15-023 Entities included in certification.** (1) The certification of a firm will include all of its subsidiaries or divisions doing business in the state of Washington. A subsidiary is defined, for the purpose of this rule, as an entity which is fifty percent owned and/or has its interest controlled by another single firm.

(2) One certificate will be issued to an approved self-insurer, including all subsidiaries or divisions. The entities will be considered as one employer for all purposes of Title 51 RCW.

[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.]

**WAC 296-15-030 Surety requirement.** Subsections (2) through (7) and (10) through (12) of this section shall apply only to individual self-insurers and joint ventures and shall not apply to counties, cities, school districts, municipal corporations, and individual accounts participating in group self-insurance programs. Subsection (9) of this section shall apply only to counties, cities, municipal corporations, and school districts not participating in group self-insurance programs. Group self-insurance programs are subject to subsection (8) of this section and reserve requirements set forth in WAC 296-15-02601(3) and 296-15-02605. Subsections (1) and (13) of this section apply to all self-insurers.

(1) For the purposes of this section, the following definitions apply:

(a) "Developed reserves" means an estimate of the total remaining cost of the claims of an accident year made by use of development factors.

(b) "Development factor" means an actuarially determined factor which expresses the changes in either incurred or paid liability from one year to the next.

(c) "Incurred liability" means the total cumulative amount paid plus the total amount reserved for future payments on all claims of an accident year.

(d) "Loss development" means the historical change in the incurred or paid liability of an accident year due to the additional payment of benefits or the revaluation of claim reserves as a result of changes in the claimant's condition, the reopening of claims, or the opening of claims incurred but not previously reported.

(e) "Loss development analysis" means the actuarial projection of ultimate claim liability which a self-insured employer may expect to pay for all claims reported to the department each year as of December 31 based on the historical development of liability.

(f) "Paid liability" means the total cumulative amount paid on the claims of an accident year.

(g) "Reported reserves" means the estimated dollar amount adequate to cover claim costs through closure.

(2) Upon approval of an application for certification to self-insure, the director shall review the matter and notify the employer of the amount of surety which must be provided to secure the payment of compensation and assessments, pursuant to RCW 51.14.020 as now or hereafter amended. This amount as so established may be satisfied by the employer's supplying of cash, corporate or governmental securities approved by the director, or a bond, written by a company admitted to transact surety business in this state, in favor of the department. A self-insurer with a net worth of not less than five hundred million dollars may also provide surety in the form of an irrevocable standby letter of credit issued by a federally or state chartered commercial bank authorized to conduct business in this state. Cash and securities of a self-insurer shall be deposited with an escrow agent approved by the director and administered pursuant to a written agreement between the department, the self-insurer and the escrow agent. Cash and securities shall be registered in the name of the escrow agent on behalf of the self-insurer. The originals of all surety documents submitted by self-insurers after acceptance by the director will be kept on file in the department.

(3) The minimum amount of surety required for initial certification as a self-insurer shall be the projected average current cost of a permanent total disability claim including medical, time-loss, pension reserve, and any other miscellaneous claim costs paid prior to award of the pension. This average cost shall be calculated by the department on an annual basis.

The surety required for initial certification as a self-insurer may be greater than the minimum amount described above. In establishing such surety requirements, the department shall estimate the following amounts:

(a) The estimated amount of accident and medical aid fund premium that the self-insurer would have paid to the state fund during the first year of self-insurance, if it had remained in the state fund.

(b) The estimated amount of incurred benefits for the first year of self-insurance, based on past experience with the state fund, adjusted for intervening changes in benefit schedules and exposure.

If either or both of the above amounts exceed the minimum surety requirement described in this section, the department will require the larger of (a) or (b) of this subsection as the surety requirement for initial certification as a self-insurer.

(c) Provided that, the initial surety requirement for a self-insurer may be based on an estimate of the expected average annual incurred losses, made by an independent qualified actuary.

(d) The surety required in accordance with the above procedures may be adjusted by the department if there are other known conditions which may alter the self-insurer's potential claim costs and/or its ability to pay them.

(4) The surety requirement for each self-insurer will be subject to review and increased or decreased at such times as the director deems necessary to maintain the adequacy of these requirements. To facilitate this review a self-insurer's annual report (SIF #7) shall be required in the form prescribed by the director and supplied to all self-insurers.

Surety requirements shall not be increased unless and until one or more of the following conditions are met:

(a) An estimate of the self-insurer's outstanding claim liabilities, made by either the self-insured employer or the department, exceeds the amount of surety in force; or

(b) The projected average current cost of a permanent total pension claim including medical, time-loss, pension reserve, and any other miscellaneous claim costs paid prior to award of the pension, exceeds the surety in force for the employer by twenty-five thousand dollars or more.

(5) In determining the surety requirement after the initial three years of certification, the department will make an analysis of the self-insurer's loss development using both incurred and paid methods. The analysis will result in factors for each period of loss development.

(a) These factors will be used to estimate the developed reserves within each method, as follows:

(i) The reported incurred liability for each accident year will be multiplied by its development factor resulting in the developed incurred liability after any appropriate subtraction of amounts for secured pensions and anticipated recoveries from excess insurance.

(ii) The reported paid liability for each accident year, without these subtractions, will be multiplied by its development factor resulting in the developed paid liability.

(iii) The developed reserve estimates made by the incurred and paid methods will be the result of subtracting the amount of benefits paid to date from the developed liability estimated by the respective methods.

(b) The surety required to secure the self-insurance reserves reported at the end of each calendar year will be determined by the percent of difference between the developed reserves estimated by the incurred method and the developed reserves estimated by the paid method. Whether the paid estimate is higher or lower than the incurred estimate, the paid estimate will be subtracted from the incurred estimate. The resulting difference will be divided by the incurred estimate to determine the percent of difference. The surety requirement will then be established as follows:

(i) In cases where the difference between the estimates is less than twenty-five percent, the surety will be established at the level of the incurred estimate.

(ii) In cases where the difference between the estimates is twenty-five percent or more but less than forty percent, the surety will be established at the average of the two estimates.

(iii) In cases where the difference between the estimates is forty percent or more, the department will make such adjustments to its procedure for estimating developed reserves as necessary. The surety will be established at the resulting estimate.

(iv) The surety required of a self-insurer will not be less than the current minimum surety requirement, with the exception that surety will not be required to increase to the minimum level unless the conditions indicated in subsection (4) of this section are met.

(c) The following special considerations shall apply in adjusting surety requirements for a self-insurer:

(i) Pension claims - Reserve amounts attributable to death or permanent total disability claims independently secured by means of a bond or assignment of account, and which are included in estimates of outstanding claim liabilities as shown on the self-insurer's annual report (SIF #7), shall be deducted from estimates of outstanding claim liabilities made in accordance with other provisions of this section.

(ii) Reinsurance - Anticipated recoveries under reinsurance policies held by a self-insurer must be documented by the self-insurer and reported to the department to qualify for consideration in establishing surety requirements. Such anticipated recoveries shall be applied to either the self-insurer's estimate of outstanding claim liabilities as shown on the most current self-insurer's annual report (SIF #7) or the department's estimate of the self-insurer's outstanding liabilities made in accordance with this rule, whichever is greater. If the resulting estimate of claim liabilities net of reinsurance recoveries is less than the surety requirement imposed by this rule without adjustment for reinsurance, the surety requirement shall be reduced accordingly; provided, that surety requirement imposed upon initial certification of a self-insurer or the minimum surety requirement may be retained by the department regardless of other estimates of claim liabilities for the self-insurer.

(iii) Strict application of loss development factors based upon the loss development analysis presumes a consistency of reserving methodology and results for the self-insurer. If the department determines that an employer has changed its reserving methodology in such a way as to invalidate loss development factors based upon past experience, then the department shall make such adjustments to the procedure as it may deem appropriate under the circumstances.

(iv) The department will give due consideration to any estimate of the self-insured employer's outstanding claim liabilities made by an independent qualified actuary. Such independent actuarial estimates are optional and not required by this rule.

(v) The department may allow a cap to the surety required of a self-insurer for each policy period in which there has been aggregate excess workers' compensation insurance. The cap will be equal to the dollar amount resulting by subtraction of the total benefits paid for the period from the policy retention amount.

(A) This cap shall be allowed only if the following criteria have been met prior to the annual determination of the surety requirement:

(I) The excess insurance company shall specify in writing that it will reimburse the department for any claims

costs the department may incur if the self-insurer defaults and the department has paid the benefits.

(II) The self-insurer shall provide, in addition to its regular annual report (SIF-7), a report showing the claims costs and reserves by policy period for the time there is aggregate excess insurance.

(III) Any change in the retention amount for a policy period shall be communicated in writing to the department by the excess insurance company.

(B) The department will compare its estimate of the self-insurer's developed reserves for each policy period to the policy retention amount for that period less the benefits paid to date. The cap will be allowed if the developed reserves are greater. A reduction in a self-insurer's surety requirement will not be allowed for an anticipated recovery from specific excess insurance if a cap is allowed for aggregate excess insurance. The self-insurer shall provide surety for the amount of developed reserves exceeding any limit of the excess insurance coverage for a policy period.

(d) Any changes to the existing surety required by the department based on the loss development analysis shall be due by July 1 of each year, or an authorized extension date, and such changes shall provide adequate surety for all self-insured workers' compensation liabilities of the employer, regardless of when those liabilities were incurred.

(6) Surety must be submitted on a department-approved form. This form requires coverage of all past, present, and future liabilities. The only exceptions which would allow coverage from the effective date forward are the self-insurer's initial surety or surety which continues coverage provided by other cancelled surety. If a bond is provided in an amount equal to the self-insurer's current surety requirement, on a department-approved form covering all liabilities, all other surety will be released. The department will have sole authority to determine in which order surety is used in the event of a default.

(7) When an employer surrenders its certificate to self-insure, it must continue to provide surety at the level determined by the department. The Annual Report of Self-Insured Business (SIF #7) must continue to be filed as long as quarterly reporting is required. A bond existing at the time of surrender of certificate may be cancelled, but it continues to provide surety for claims occurring prior to its cancellation. Any increase in surety required must be in the form of cash or securities deposited into an escrow account if a bond or letter of credit cannot be provided. All surety will be held until there is no further possibility of benefit payments.

(8) A self-insurer's annual report (SIF #7) shall be required of group self-insurance programs on the form supplied by the department.

(9) The surety requirement for counties, cities, school districts, and municipal corporations shall provide for sufficient revenues to satisfy one hundred percent of the estimated claims for the succeeding fiscal period. The minimum security requirement shall be one hundred thousand dollars. In addition, a cumulative reserve of not less than twenty-five percent of the surety requirement must also be established. This cumulative reserve may be in the form of a bond, cash or securities in an escrow account, or any acceptable legal source of funding.

By July 1 of each year, each county, city, school district, or municipal corporation shall certify, on a form supplied by the department, its estimated claims liability and the revenues to meet those obligations. Documentation must be provided showing the estimated claims liabilities, the source(s) of revenues, and detailing accounts identified for the self-insurance obligations. Documentation of the cumulative reserve must specify the type of funding and reflect the account balance. Surety requirements for governmental units shall be subject to a periodic review by the department.

(10) An employer meeting the financial requirements specified in RCW 51.14.020(2) may provide the department with an irrevocable standby letter of credit to satisfy the surety requirement specified for its self-insurance obligations. An employer using a letter of credit must provide the department with a memorandum of understanding, on a form supplied by the department, agreeing to the following conditions:

(a) The letter of credit providing surety for the self-insurer's workers' compensation claims liability will cover all past, present, and future liability of the self-insurer regardless of any date of injury.

(b) Unless the department is notified otherwise, by registered mail at least sixty days prior to its expiration date, the letter of credit will be automatically extended without amendment for an additional one-year period.

(c) The self-insurer may substitute a bond and/or cash or securities deposited into an escrow account, in an amount designated by the department, as replacement for the letter of credit.

(d) If the department is notified that the letter of credit will not be renewed and no acceptable replacement surety is provided within thirty days of receipt of such notice, the department will draw the full value of the letter of credit. All proceeds of the letter of credit will be deposited with the accident fund under a subsidiary ledger account. Accrued interest in excess of the self-insurer's surety requirement will be returned semiannually. If the self-insurer provides acceptable replacement surety at a later date, the proceeds will be returned.

(e) If, in addition to not providing replacement surety for a nonrenewed letter of credit, the self-insurer then defaults on payment of its workers' compensation liabilities, the proceeds of the letter of credit previously deposited with the accident fund and the accrued interest will be used to provide for payment of the self-insurer's workers' compensation liabilities.

(f) If the self-insurer's letter of credit remains in force and the self-insurer defaults on the payment of its workers' compensation liabilities, the department will draw the full value of the letter of credit. The proceeds will be deposited and accounted for as indicated in (d) of this subsection and, with the accrued interest, used to provide for payment of the self-insurer's workers' compensation liabilities.

(g) Legal proceedings initiated by any party with respect to the letter of credit shall be subject to the courts and laws of the state of Washington.

(11) Letters of credit provided by self-insurers as surety are subject to acceptance by the department. Acceptance will include, but not be limited to, approval of the financial

condition of the banking institution issuing the letter of credit.

(a) A bank must provide to the department an audited financial statement or call report made to the banking regulatory agencies for the most recent fiscal year. The financial information from such banks must be provided with the first letter of credit issued and annually during the period that any letter of credit is in effect.

(b) A letter of credit will not be accepted if the amount of the credit exceeds the legal limit allowed to the bank.

(c) A letter of credit will not be accepted unless the issuing bank is able to accept presentment of drawings on the credit at an office in this state.

(12) Letters of credit and any amendments to letters of credit must be on forms supplied by the department. The department's interest in a letter of credit will be released if the self-insurer provides a bond or acceptable cash or securities deposited into an escrow account in the amount required by the department.

(13) Failure to provide active surety in the amount required by the department will result in the withdrawal of certification.

[Statutory Authority: RCW 51.04.020. 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.]

**WAC 296-15-060 Administrative cost assessment.** (1) Assessments levied by the department against each self-insurer shall be based on the self-insured employer's proportionate share of the administrative costs determined to be attributable to self-insurers, including expenses of the safety division, the industrial insurance division, the University of Washington environmental research facility, the board of industrial insurance appeals, appeals expenses and other general administrative expenses.

(2) The administrative assessment rate shall be determined on a fiscal year basis as prescribed in subsection (1) of this section. Employers certified to self-insure after the fiscal period for which costs were used to determine the assessment rate shall be assessed at a rate which does not include adjustments made for prior periods. The administrative assessment shall be based on the payments made on all claims involving the self-insured employer: *Provided,* That in any event a self-insured employer shall be subject to the payment of a minimum quarterly assessment of twenty-five dollars.

(3) Administrative cost assessments shall be payable for each quarter, by the thirtieth day following the receipt of a quarterly report form supplied by the department (SIF #6). This quarterly report form shall also provide for payment of the supplemental pension fund assessment.

(4) A self-insured employer who has, or shall hereafter, voluntarily, or involuntarily, surrender his certification as a self-insurer shall pay an adjusted administrative assessment. The amount of this adjusted administrative assessment will be determined annually and shall represent such self-insurer's portion of the administrative assessment which can be attributed directly to the operational costs of the self-insurance section. This adjusted administrative assessment shall continue until such time as all liabilities and all responsibilities of such employer have been terminated. The amount of this adjusted administrative assessment shall in no case be less than $25.00 per calendar quarter.

When such an employer has had no self-insured claim activity, excluding activity in cases of total permanent disability or death, for a period of one year, a request may be made to the department for a review to determine if there is a need to continue the adjusted administrative assessment, in which circumstances, the minimum assessment will not apply.

[Statutory Authority: RCW 51.04.020. 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.]

**WAC 296-15-065 Self-insurers' insolvency trust.** (1) For the purpose of interpretation of this section, the term "insolvent self-insurer" means a self-insurer who has defaulted upon any obligation under Title 51 RCW, and with respect to which default the director has taken action authorized by RCW 51.14.060.

(2) A self-insurance insolvency fund shall be established in the office of the state treasurer. The purpose of this fund shall be to pay, to the injured workers of insolvent self-insured employers under Title 51 RCW, any unsecured benefits to which such injured workers had become entitled, and to pay for the department's associated administrative costs, including attorneys' fees.

(3) This fund shall be financed by assessment, as follows: (a) Assessments shall be levied on a post-insolvency basis against all self-insurers, including any of which have surrendered certification at any time during the thirty-six months prior to the close of a quarter for which assessments to the insolvency fund are payable: *Provided, however,* That school districts, cities and counties are exempt from assessment(s) to finance such self-insurers' insolvency fund: *Provided, further,* That school districts, cities and counties shall not have their obligations discharged, in full or in part, with moneys from said self-insurers' insolvency fund; (b) each assessment shall be a percentage of the payments made on all claims involving the self-insured employer; (c) assessments shall be levied on a quarterly basis as prescribed by the department; (d) assessments shall be payable each quarter, by the thirtieth day following the notice of assessment.

(4) The administration of an insolvent self-insurer's claims shall be the responsibility of the department until the security deposit as required by RCW 51.14.020 and/or the recovery from any court action concerning the self-insurer's workers' compensation liabilities have been exhausted.

(5) Establishing self-insurance insolvency fund assessment rates and administering the claims of insolvent self-insurers upon depletion of remedies for reimbursement of workers' compensation expenditures made by the department as specified under subsection (4) of this section shall be the responsibility of the director, or the director's designee, after due consideration of the recommendations of a five-member insolvency trust advisory board established in this section.

(6) Assessments for the self-insurers' insolvency fund shall be in amounts deemed adequate to reimburse the accident, medical aid and/or pension reserve funds for benefits paid from these funds to injured workers of insolvent self-insurers, and for associated administrative costs, including attorneys' fees. Any and all interest earned on assessments levied and collected by the department shall become a part of the self-insurers' insolvency fund, and be distributed only for the purposes for which the fund was established.

(7) The insolvency trust advisory board shall be comprised of the director or the director's designee, three representatives of self-insured employers, and one representative of workers. Initially and thereafter, the director shall appoint the self-insurer representatives from a list of names submitted by state-wide organizations of self-insurers and others. Initially and thereafter, the director shall appoint the worker representative from a list of names submitted by an organization, state-wide in scope, which through its affiliates embraces a cross section and a majority of the organized labor of the state. Initial appointments shall be made within thirty days of the effective date of this section. Two of the initial appointees shall serve three-year terms, and two shall serve two-year terms. Thereafter, appointed representatives shall serve two-year terms. Each representative on the insolvency trust advisory board shall have one vote. The board shall act in an advisory capacity; all final decisions regarding the insolvency trust shall be made by the director or the director's designee.

(8) No later than March 31 of each year, the board shall report in writing to the workers' compensation advisory committee regarding the status of the insolvency fund as of the previous December 31, and summarize any events or transactions of interest or importance to the ongoing operation of the insolvency fund.

[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.]

# Chapter 296-17 WAC

# MANUAL OF RULES, CLASSIFICATIONS, RATES, AND RATING SYSTEM FOR WASHINGTON WORKERS' COMPENSATION INSURANCE

WAC



## DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-17-896 Christmas tree industry base rate revision. [Statutory Authority: RCW 51.04.020(1) and 51.16.035. 90-24-041, § 296-17-896, filed 11/30/90, effective 12/31/90.] Repealed by 93-12-093, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.04.020(1) and 54.16.035.

**WAC 296-17-350 Minimum premiums—Assumed worker hours.** A minimum premium is the lowest amount

of premium to be paid by an employer and is also the basis for determining premium computation for workers for whom an assumed number of worker hours must be, and hereby, is established:

(1) **Minimum premium.** Except as otherwise provided in this chapter, every employer shall be liable for a premium not less than ten dollars for any calendar quarter regardless of number of worker hours reported.

(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) **Building or property management.** Resident managers, caretakers, or similar employments that are employed for irregular periods and whose compensation is for a stipulated sum in money or a substitute for money shall be reported for the purpose of premium calculation by dividing total compensation by the average hourly wage for classification 4910 as contained in WAC 296-17-89501 "average hourly wages" to determine reportable assumed hours. Provided that the reportable exposure calculated under this subsection shall not exceed 520 hours per quarter for each worker.

(4)(a) **Commission personnel—Inside employments.** Commission personnel—inside employments are persons whose compensation is based upon a percentage of the amount charged for the commodity or service rendered and who are employed exclusively within an office having no duties away from the office. Commission personnel—inside employments are to be reported for premium purposes at a minimum of assumed worker hours of not less than eight worker hours a day for part-time employment, or not less than 40 worker hours per week for full-time employment unless the employer maintains and presents to the department's representative at the time of audit payroll records that show in detail the name of each such commissioned worker, the actual number of hours worked for each such worker and the date or dates the services were rendered. If actual time records are maintained then such actual hours shall be reported to the department and premiums paid on such actual hours.

(b) **Commission personnel—Outside employments.** Commission personnel—outside employments are persons whose compensation is based upon a percentage of the amount charged for the commodity or service rendered and who are employed to perform duties primarily away from the employers premises although some office work may be performed. Commission personnel—outside employments are to be reported for premium purposes at a minimum of assumed worker hours of not less than eight worker hours a day for part-time employment, or not less than 40 worker hours per week for full-time employment: *Provided,* That the assumed eight worker hours daily for part-time employment will apply only if the employer's books and records are maintained so as to show separately such person's actual record of employment.

(5) **Salaried personnel.** Salaried personnel for the purposes of this chapter means persons whose compensation is not governed by the number of hours devoted to employment for their employer. Employers having salaried personnel in their employ shall for the purpose of premium calculation report assumed worker hours based upon one hundred sixty worker hours for each month in which the employee is on salary: *Provided,* That if the employer maintains complete and accurate records, supported by original time cards or timebook entries, the employer may report and pay premium on the actual hours worked by salaried personnel: *Provided further,* That the department may, at its discretion, authorize some other method in assuming workers hours for premium calculating purposes in the case of contract personnel employed by schools and/or school districts.

(6) **Piece workers.** For employees whose compensation is based upon the accomplishment of a number of individual tasks whether computed on the number of pounds, items, pieces, or otherwise who are not subject to any federal or state law or rule which requires the reporting of actual hours worked, the employer shall for the purpose of premium calculation assume each two dollars of earnings of each employee as representing one worker hour: *Provided,* That if the average rate of compensation for the applicable classification is at least $3.00 but less than $3.50 per worker hour the assumed amount shall be $3.00 of earnings as representing one worker hour, and on a progressive basis, if the average compensation is at least $3.50 but less than $4.00 the assumed amount shall be $3.50 of earnings as representing one worker hour, and so forth. The records of the department as compiled for the preceding fiscal year ending June 30, shall be the basis for determining the average rate of compensation for each classification: *Provided further,* That an employer who maintains records but is not required to do so shall report the actual hours worked for the purpose of premium calculation. In the event an employer who is otherwise required by federal or state laws or rules to maintain records of actual hours worked by each employee fails to do so, the worker hours of such employees will be determined by dividing the gross wages of each employee by the state minimum hourly wage to determine the hours reported for the purpose of premium calculation. Notwithstanding any other provisions of this section, workers employed in a work activity center pursuant to WAC 296-17-779 shall be reported on the basis of the piece worker rule.

(7) **Noncontact sports teams.** All employers having personnel in their employ as defined under WAC 296-17-745 shall for the purpose of premium calculations, report assumed worker hours based upon 40 worker hours for each week in which any duties are performed.

(8) **Jockeys and race drivers.** All employers having personnel in their employ as defined under WAC 296-17-739

shall, for the purpose of premium calculations, report assumed worker hours based upon ten hours for each mount in each horse race; professional drivers shall report worker hours based upon ten hours for each heat or race of any racing event: *Provided,* That any day such personnel do not ride or drive in a race, the premium calculation shall be made by assuming ten worker hours for any day in which duties are performed.

(9) **Pilots and flight crew members.** Pilots and flight crew members having flight duties during a work shift including preflight time shall have premium calculated by utilizing daily readings logged per federal requirements of the aircraft tachometer time: *Provided,* That if the total tachometer time for any day includes a fraction of an hour, the reportable time will be increased to the next full hour: *Provided further,* That pilots and flight crew members who assume nonflying duties during a work shift will have premium calculated in accordance with the appropriate rules and classifications applicable to nonflight duties.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-350, filed 5/31/93, effective 7/1/93; 90-13-018, § 296-17-350, filed 6/8/90, effective 7/9/90; 89-24-051 (Order 89-22), § 296-17-350, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.04.020(1). 89-16-001 (Order 89-07), § 296-17-350, filed 7/20/89, effective 8/20/89. Statutory Authority: RCW 51.16.035 and 51.04.020. 89-07-078 (Order 89-02), § 296-17-350, filed 3/21/89, effective 4/21/89. Statutory Authority: RCW 51.16.035. 88-14-076 (Order 87-31), § 296-17-350, filed 7/1/88, effective 1/1/89; 88-12-065 (Order 88-05), § 296-17-350, filed 5/31/88; 87-24-060 (Order 87-26), § 296-17-350, filed 12/1/87, effective 1/1/88; 85-06-026 (Order 85-7), § 296-17-350, filed 2/28/85, effective 4/1/85; 84-24-016 (Order 84-23), § 296-17-350, filed 11/28/84, effective 1/1/85. Statutory Authority: RCW 51.04.020(1). 84-11-034 (Order 84-11), § 296-17-350, filed 5/15/84. Statutory Authority: RCW 51.16.035. 83-24-017 (Order 83-36), § 296-17-350, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-350, filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-350, filed 11/27/78, effective 1/1/79; Order 77-27, § 296-17-350, filed 11/30/77, effective 1/1/78; Order 77-10, § 296-17-350, filed 5/31/77; Order 76-18, § 296-17-350, filed 5/28/76, effective 7/1/76; Order 75-28, § 296-17-350, filed 8/29/75, effective 10/1/75; Order 74-40, § 296-17-350, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-350, filed 11/9/73, effective 1/1/74.]

**WAC 296-17-430 General exclusions.** Some operations are so exceptional or unusual that they are excluded from the scope of all basic classifications. Such operations are referred to as general exclusions and are subject to the division of worker hours rules in all classifications including the standard exception classifications. The following operations are excluded from all basic classifications including the standard exception classifications unless they are specifically included.

(1) Aircraft operation - All operations of the flying crew.

(2) Racing operations - All operations of the drivers and pit crews.

(3) Diving operations - All operations of diving personnel and ship tenders who assist in diving operations.

In addition to the above three listed exclusions, the following operations are similarly excluded from all basic classifications, provided that no division of these operations shall be permitted between the basic classifications assigned to cover these operations and any standard exception classifications.

(a) New construction or alterations by employees of the employer.

(b) Musicians and entertainers.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-430, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-430, filed 5/29/87, effective 7/1/87; 85-06-026 (Order 85-7), § 296-17-430, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-430, filed 11/30/83, effective 1/1/84; Order 74-40, § 296-17-430, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-430, filed 11/9/73, effective 1/1/74.]

**WAC 296-17-440 Standard exceptions.** The following employments referred to as standard exceptions are to be separately rated unless these employments are specifically included within the scope of a basic classification by use of words such as "including clerical office and outside sales." (Use of the words "clerical office" will also include draftsmen and use of the words "sales personnel" will also include collectors, messengers and corporate officers.) Provided that a division of a single employee's worker hours shall not be permitted between two standard exception classifications or between a standard exception classification and a basic business classification except as provided in the general exclusion rules of this manual.

The standard exceptions are defined below:

(1) Clerical office employees are defined as those employees whose duties are confined to keeping the books or records of the employer, or conducting correspondence or who are engaged wholly in office work where such books or records are kept or where such correspondence is conducted, having no other duty of any nature in or about the employer's premises. If any clerical office employee is exposed to any operative hazard of the business, their entire worker hours shall be assigned to the highest rated classification of work to which they are exposed. The clerical office classification shall be applied only to persons as herein described who are employed exclusively in separate buildings or on separate floors of buildings or in departments on such floors which are physically separated from all other work areas of the employer by structural partitions and within which no work is performed other than clerical office duties as defined in this paragraph.

(2) Draftsmen will be considered to be clerical office employees when their duties are limited to office work only and who are engaged strictly as draftsmen in such a manner that they are not exposed to the operative hazard of the business. If any draftsman is exposed to any operative hazard of this business, their entire worker hours shall be assigned to the highest rated classification of work to which they are exposed.

(3) "Sales personnel - outside" covered under risk classifications 6301, 6302, and 6303 are defined as those employees engaged in such duties away from the premises of the employer who sell or solicit new accounts or customers for the employer or who service existing accounts or customers for the employer. Provided that no employee shall be assigned to a sales classification code if their duties include delivery, even though they may also solicit or collect. Employees having delivery duties, even if they walk or use public transportation, shall be assigned to the basic classification of the employer.

(4) Messengers will be considered sales employees, provided the following conditions are met:

(a) The messenger is used solely by the employer in connection with the administration of the employer's business operation.

(b) The operation is not provided to the public as a general delivery service.

(c) The employer's basic classification does not include the standard exception classification designations.

If all the above conditions do not exist, any employee assigned such duties shall be assigned to the governing classification of the employer when multiple basic classifications are assigned or to the basic classification in the event an employer has only a single basic classification assigned.

(5) Corporate officers are defined as those employees of a corporation elected and empowered in accordance with the articles of incorporation or bylaws as officers of the corporation who are also shareholders and serve on the board of directors of the corporation and whose duties are limited to administrative, clerical office and outside sales activities for the corporations. Any corporate officer who performs any duty that relates directly to the operational activities of the business shall be assigned to the basic classification(s) of the employer applicable to the work being performed. A corporate officer engaged exclusively in outside sales shall be assigned classification 6303. In no event however will a corporate officer be assigned the clerical office classification 4904.

With the exceptions of occupations falling within any classification that specifically includes clerical office, inside draftsmen or sales personnel, the following designated occupational classifications shall apply.

Classification 4904 clerical office employees including inside draftsmen.

Classification 6303 sales personnel, outside or away from the employers premises including collectors, counsellors, N.O.C., and messengers.

Classification 6301 automobile, truck, camper, trailer, mobile home, motorcycle and pleasure craft sales personnel.

Classification 6302 all door to door sales personnel.

Classification 7101 corporate officers.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-440, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-440, filed 5/31/91, effective 7/1/91; 89-24-051 (Order 89-22), § 296-17-440, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 87-24-060 (Order 87-26), § 296-17-440, filed 12/1/87, effective 1/1/88; 87-12-032 (Order 87-12), § 296-17-440, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-440, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-440, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-440, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-440, filed 11/9/73, effective 1/1/74.]

**WAC 296-17-450 Special agricultural classification interpretations.** Farming in classifications 4802 through 4806, 4808, 4809, 4810, 4811, 7301, 7302, and 7307 will include farm labor by contractors and farm machinery operations by contractors.

To qualify for separate ratings (classifications), separate and distinct payroll records of each such operation will be required.

If a single establishment or work comprises more than one of classifications 4802 through 4806, 4808, 4809, 4810, 4811, 7301, 7302, and 7307 and the language of the classifications under consideration allow for a division of payroll hours then the premiums shall be computed according to the payroll of each classification provided distinct payroll records have been kept for each such operation, otherwise, the operation will be assigned to the highest rated classification representing any portion of the work being performed. Separate agricultural classifications shall not be assigned to any agricultural operation which is within the scope of another basic classification assigned to the business. For example an employer engaged in the business of raising livestock would not be permitted to report the growing of crops which is used to feed such animals under a separate classification since the risk classification governing livestock farms includes the raising of such crops. The department in its discretion may assess a single rate of premium for an agricultural establishment when a substantial portion of the operation falls within one classification, and in such cases, the entire operation will be required to be reported in such largest classification: *Provided,* That under no circumstance will the hand-picking classification (4806) apply for the purpose of single rating an entire establishment engaged in other phases of agricultural activities. Provided further, that farm labor contractors shall be assigned the classification(s) applicable to the agricultural establishment for whom they are providing services.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-450, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-450, filed 5/31/88, effective 7/1/88; 85-24-032 (Order 85-33), § 296-17-450, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-450, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-450, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-450, filed 11/29/82, effective 1/1/83. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-450, filed 11/27/78, effective 1/1/79; Order 74-40, § 296-17-450, filed 11/27/74, effective 1/1/75; Order 74-29, § 296-17-450, filed 5/29/74, effective 7/1/74; Order 73-22, § 296-17-450, filed 11/9/73, effective 1/1/74.]

**WAC 296-17-501 Classification 0101.**

Airports, landing strips, runways and taxi ways: Construction and repair

Alley and parking lot: Construction

Diking, N.O.C. - including oil spill clean-up involving diking and/or ditching work

Excavation work, N.O.C.

Forest trail construction, fire fighting and slash burning, N.O.C.

Grading work, N.O.C. - including land leveling and grading of farm lands by contractor

Highway, street and road, N.O.C.: Construction and repair - includes operations such as grading, grubbing, clearing, surfacing, striping, guard rail highway divider installation, highway lighting and highway sign installation

Humus or peat digging - including humus or peat dealers

Land clearing, N.O.C. - including slope grooming

Parking lot striping

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

Railroad line: Construction, maintenance and repair, N.O.C., - including the dismantling of tracks and the sale of salvaged track metal and ties

Retaining wall: Construction or repair when done in connection with road, street and highway construction, N.O.C.

Sand, gravel, or shale: Digging, N.O.C.

Tunnels and approaches - including lining, cofferdam work, shaft sinking, and well digging with caisson

This classification excludes bridge construction which is to be reported separately in classification 0201 although such a structure may be constructed as a part of a highway, street or road construction project; logging road construction which is to be reported separately in classification 6902; log railroad construction which is to be reported separately in classification 6902; and tunnels and approaches - including lining, cofferdam work, shaft sinking and well digging with caisson done in connection with dam construction which is to be reported separately in classification 0701.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-501, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-501, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-501, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-501, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-501, filed 11/30/79, effective 1/1/80; Order 76-36, § 296-17-501, filed 11/30/76; Order 75-38, § 296-17-501, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-501, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-501, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-506 Classification 0106.

Tree topping and pruning, N.O.C. - use of this classification is limited to employers engaged in providing a variety of tree care services such as tree topping and tree pruning. Work performed subject to this classification will generally take place in residential areas, or settings adjacent to roadways, parking lots, business parks, shopping malls. A primary purpose of this work is to remove tree or branch hazards from power lines or building structures. This classification includes all the incidental ground operations such as picking up branches and limbs, operating mobile chip machines used in connection with a tree topping or limbing operation, spraying or fumigating, and debris removal. This classification excludes tree pruning done in connection with an orchard operation which is to be reported separately in classification 4803; tree pruning done in connection with a nursery operation which is to be reported separately in classification 4805; tree topping or tree pruning done in connection with a public or private forest, range land operation which is to be reported separately in classification 5004; or tree pruning done in connection with a Christmas tree farm operation which is to be reported separately in classification 7307.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-506, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-506, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-506, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-506, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-506, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-50601 Classification 0107.

Invisible fence installation

Pipelaying, N.O.C.

Utility line construction: Underground type, N.O.C. - including television cable, power, and telephone lines.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-50601, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-50601, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-50601, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-50601, filed 11/30/83, effective 1/1/84; 80-17-016 (Order 80-23), § 296-17-50601, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-50601, filed 11/30/79, effective 1/1/80.]

### WAC 296-17-50602 Classification 0108.

Ditches and canals, N.O.C.

Sewer construction

Septic tank installation, including drainfield construction

Tanks, N.O.C. - underground type: Installation and repair.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-50602, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-50602, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-50602, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-50602, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-50602, filed 11/29/82, effective 1/1/83; 80-17-016 (Order 80-23), § 296-17-50602, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-50602, filed 11/30/79, effective 1/1/80.]

### WAC 296-17-510 Classification 0301.

Landscape gardening

Lawn and yard care

This classification includes all work related to employers engaged in landscaping or lawn and yard care such as planting or replanting a lawn, including mixing and spreading top soil, seeding or sodding, chemical spraying or fertilizing; all lawn care such as mowing, edging, and thatching; planting and caring for trees, shrubs, and plants; installing, servicing, or repairing underground lawn or landscape sprinkler systems; weeding flower beds; spreading decorative rock or garden bark; and the construction of incidental arbors or trellis and rock or brick paver walkways when done in connection with landscaping or lawn care project or contract

This classification also includes the installation, service, and repair of above and below ground agricultural sprinkler/irrigation systems; and the planting, spraying or fumigating trees, shrubs, and plants when done separate from and not in connection with or incidental to tree care services and care of landscape for the beautification of median strips and roadsides

This classification excludes chemical spraying by aircraft which is to be reported separately in classification 6903; land clearing or grading operations which are to be reported separately in classification 0101; construction or maintenance of ditches or canals which are to be reported separately in classification 0108; tree care services by contractor which are to be reported separately in risk classification 0106; or contract forest and range land service activities for public or private landowners are to be reported separately.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-510, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-510, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-510, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-510, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-510, filed 11/30/79, effective 1/1/80; Order 76-36,

§ 296-17-510, filed 11/30/76; Order 73-22, § 296-17-510, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-512 Classification 0306.

Boilers, N.O.C., installation, service or repair including boiler scaling and tank erection within buildings
Hot water heater - installation, service, or repair
Plumbing, N.O.C.; including incidental side sewer hook ups (street to house) when performed by a plumbing contractor subject to this classification, and only when it is performed as a part of a plumbing contract which includes installation of water lines and waste carry systems within a building; and sewer pipe cleaning including services provided by Roto Rooter or similar service providers engaged in line cleaning or unplugging. Side sewer hookups done as a separate contract is to be separately reported in classification 0101 "Excavation"
Pump installation, service or repair, N.O.C.
Sprinkler installation - automatic
Steam pipe, boiler, etc., covering insulation
Water softening or treatment systems - installation of new equipment systems.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-512, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-512, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-512, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-512, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-512, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-512, filed 11/29/82, effective 1/1/83. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-512, filed 11/30/79, effective 1/1/80; Order 74-40, § 296-17-512, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-512, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-521 Classification 0508.

Blast furnace and metal burners construction
Crane or derrick installation
Elevated railway, tram, lift, etc., construction, maintenance and repair
Exterior tanks - all types - erection, maintenance or repair, N.O.C.
Oil still or refinery construction. Excludes plant maintenance by contractor which is to be reported separately under risk classification 0603
Radio, television, water towers, poles and towers, N.O.C. - erection, maintenance and repair
Smokestacks - erection, maintenance and repair
Water cooling towers or structures - metal or wood: Erection, maintenance, and repair
Windmills - all types, erection, maintenance and repair, silo erection
This classification includes erection of skeletons for pillars, posts and like columns, all excavations, foundation work, and dismantling and repairing of above types of structures.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-521, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-521, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-521, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-521, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-521, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-521, filed 11/29/82, effective 1/1/83; Order 76-36, § 296-17-521, filed 11/30/76; Order 75-38, § 296-17-521, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-521, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-521, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-52102 Classification 0510.

Wood frame building construction or alteration, N.O.C.
For the purposes of this rule 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 installation of exterior doors and door frames whether performed by a general or specialty contractor.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-52108 Classification 0516.

Building repair and carpentry, N.O.C.
Playground equipment: Installation - wood.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-52110 Classification 0518.

Building construction, N.O.C., including alterations
Carport construction - metal: Erection
Service station canopy - metal: Erection.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-524 Classification 0603.

Dynamos: Installation, service and repair including electrical generators and turbines
Engines and gas machines: Service and repair including installation, replacement of drive belts, erection of shafting
Machinery: Installation, service and repair - including installation and repair of escalator and conveyor systems, printing presses, and commercial laundry equipment N.O.C. and millwright work, N.O.C.
Playground equipment - metal: Installation and repair
This classification includes the dismantling of all the above types of machinery and will also include plant maintenance by contractor which will be rated as millwright work.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-524, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-524, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-524, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-524, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-524, filed 11/29/82, effective 1/1/83; Order 75-38, § 296-17-524, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-524, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-526 Classification 0606.

Amusement devices, N.O.C.: Installation, service, repair, and removal - coin-operated in stores and shopping malls

Coin-operated machines - money collecting service

Fire extinguisher sales and service

Vending or coin-operated machines, operation, installation maintenance and service, includes product preparation by vending company

This classification excludes honor snack food services which will be reported under risk classification 1101 driver delivery sales, provided that in the event such an operation is conducted as a part of and in connection with an operation rated in this classification (0606), risk classification 0606 will be assigned to cover both operations.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-526, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-526, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-526, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-526, filed 2/28/85, effective 4/1/85; Order 73-22, § 296-17-526, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-527 Classification 0607.

Advertising display service for stores within buildings

Dead bolt installation - new construction by locksmith

Drapes or curtain: Installation

Household appliances - electrical: Installation, service and repair

Meat slicer or grinder: Installation, service and repair

Rubber dock bumper: Installation

Safes and vaults: Installation and removal

Television antenna or satellite disc: Installation and repair

Venetian blinds and shades: Installation

This classification will include installation, service and repair of radio and television receiving sets, two-way radio, car stereo systems and radio-television repair.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-527, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-527, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-527, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-527, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-527, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-527, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-527, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-53504 Classification 1007.

Foresters, forest rangers, timber cruisers and surveyors

Geophysical exploration, N.O.C., no core drilling

Inspection and grading bureaus, N.O.C.

Log scaling and grading bureaus

Lumber inspection services

Prospectors

Rainmaking - not by aircraft

Surveyor services, N.O.C.

Testing and inspecting of pipe lines - radiographers

Weather stations

Weigh scale attendants, N.O.C.

X-raying by contractor at industrial plants or construction sites

Classification 1007, classification 5004, and classification 5005 shall not be assigned to the same risk unless the operations described by these classifications are conducted as separate and distinct businesses and each business has separate and distinct employees.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-53504, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-53504, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-53504, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-53504, filed 11/29/82, effective 1/1/83.]

### WAC 296-17-538 Classification 1103.

Coal merchants, solid fuel yards, firewood dealers, excludes operations subject to risk classification 1004 (WAC 296-17-53501), risk classification 1702 (WAC 296-17-549), risk classification 1703 (WAC 296-17-550), risk classification 5001 (WAC 296-17-659).

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-538, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-538, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-538, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-538, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-538, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-538, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-545 Classification 1501.

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

Housing authorities, local public, all other employees including meter readers

Indian tribal councils, all other employees

This classification excludes public utility districts subject to risk classification 1301 (WAC 296-17-539) and 1507 (WAC 296-17-546); bus or transit services subject to risk classification 1404; port districts subject to risk classification 4201 (WAC 296-17-629); library districts, museum districts and school districts subject to risk classifications 6103 (WAC 296-17-680) and 6104 (WAC 296-17-681); hospital districts subject to risk classification 6105 (WAC 296-17-682); fire fighters subject to risk classification 6904 (WAC 296-17-749); and law enforcement officers subject to risk classification 6905 (WAC 296-17-750)

This classification also excludes clerical office and white collar employees.

[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 296-17-555 Classification 2002.

Freight handler services - packing, handling or shipping merchandise N.O.C.

Refrigeration car - loading, unloading or icing

This classification also includes employees engaged in repackaging of goods from damaged containers.

This classification excludes drivers or other employees with driving duties which are to be reported separately under

risk classification 1102 without a division of work hours.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-555, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-555, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 86-12-041 (Order 86-18), § 296-17-555, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-555, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-555, filed 11/30/83, effective 1/1/84; Order 75-38, § 296-17-555, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-555, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-56101 Classification 2009.

Building material dealers, warehouse centers, home improvement centers, and lumber yards: Wholesale or retail

Pump, plumbing, irrigation pipe, and pipe supply dealers: Wholesale or retail

Farm supply stores: Wholesale or retail

Hardware stores with lumber or building material supplies: Wholesale or retail

For the purposes of this rule the term "building materials" includes but is not limited to such items as wallboard, roofing, insulation, sheet metal, bricks, blocks, windows, etc.

This classification includes all store and yard operations with inventory of building material, lumber and lumber products. Such stores may also carry a variety of hardware items, hand and power tools, paints, floor coverings, garden supplies, housewares, and similar types of products

This classification excludes delivery drivers which are to be separately rated under risk classification 1101 "Delivery-stores: Retail/wholesale." This classification further excludes all other activities conducted away from the shop or plant operation.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-56101, filed 5/31/93, effective 7/1/93.]

### WAC 296-17-562 Classification 2101.

Grain milling, feed mills, feed manufacture - including preparation of cereal or compound feeds for livestock

Flour mills

Hay, grain or feed dealers

Seed merchants including operation of seed sorting machinery.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-562, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-562, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-562, filed 11/27/85, effective 1/1/86; Order 73-22, § 296-17-562, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-568 Classification 2903.

Boat: Manufacturing, repair, or refinish - wood

Box, shook, pallet, bin: Manufacturing, assembly or repair - wood - including assembly work performed at the customer's place of business

Door, jamb, window, sash, stair, molding and miscellaneous millwork manufacturing, prehanging or assembly - wood

Furniture stock manufacturing - wood

Lumber remanufacturing

Sign manufacturing - wood

Truss manufacturing - wood

Veneer products manufacturing

Wood chip, hog fuel, bark, bark flour, presto log and lath manufacturing

Wood products manufacturing or assembly N.O.C.

Sawmill operations to be reported separately under risk classification 1002. Veneer manufacturing to be reported separately under risk classification 2904

Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification. This classification excludes all installation activities away from the shop or plant.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-568, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-568, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-568, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-568, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-568, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-568, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-568, filed 11/30/81, effective 1/1/82; Order 76-36, § 296-17-568, filed 11/30/76; Order 75-38, § 296-17-568, filed 11/24/75, effective 1/1/76; Order 75-28, § 296-17-568, filed 8/29/75, effective 10/1/75; Order 73-22, § 296-17-568, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-56901 Classification 2905.

Furniture and casket manufacturing or assembly - wood

Furniture refinishing including repair - wood

Furniture refinishing with no repair work is to be reported separately under risk classification 3603

Physically separated upholstery departments of firms engaged in furniture or casket manufacturing, assembly or finishing may be reported separately under risk classification 3808, and in accordance with WAC 296-17-410

Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification. This classification excludes all installation activities away from the shop or plant.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-56901, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-56901, filed 5/29/87, effective 7/1/87.]

### WAC 296-17-57001 Classification 2907.

Cabinet, countertop, and fixture: Manufacturing, modifying or assembly - wood

Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification. This classification excludes all installation activities away from the shop or plant.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-57001, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-57001, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-57001, filed 5/29/87, effective 7/1/87.]

### WAC 296-17-57002 Classification 2908.

Truck canopy: Manufacturing metal or wood - shop only
Housing - residential type: Factory-built - shop only
Mobile homes, campers and travel trailers: Manufacturing - shop only
This classification excludes fiberglass canopy manufacturing which is to be reported separately in classification 3511.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-57002, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-57002, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-57002, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-57002, filed 11/29/82, effective 1/1/83.]

### WAC 296-17-57003 Classification 2909.

Woodenware: Household and sporting goods manufacturing or assembly, N.O.C.
This classification excludes wood products manufacturing or assembly reported under risk classifications 2903, 2905, and 2907
Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification includes work being performed in an adjacent yard when operated by an employer having operations subject to this classification. This classification excludes all installation activities away from the shop or plant.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-57003, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-57003, filed 5/29/87, effective 7/1/87.]

### WAC 296-17-572 Classification 3102.

Rock wool insulation: Manufacturing - digging or quarrying to be separately rated.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-572, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-572, filed 11/27/85, effective 1/1/86; Order 73-22, § 296-17-572, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-574 Classification 3104.

Plaster mills and whiting manufacturing, quarrying to be separately rated
Talc mills and emery works
Asbestos products manufacturing, including spinning or weaving, mica goods manufacturing
Soapstone or soapstone products manufacturing, marble cutting and polishing, slate milling
Stone cutting or polishing, N.O.C., away from quarry
Plasterboard or plaster block manufacturing
Coating of building materials, N.O.C. - shop operations
Monument dealers who do stonecutting, engraving or sandblasting.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-574, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-574, filed 11/27/85, effective 1/1/86; 82-24-047 (Order 82-38), § 296-17-574, filed 11/29/82, effective 1/1/83; Order 76-36, § 296-17-574, filed 11/30/76; Order 73-22, § 296-17-574, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-579 Classification 3401.

Automobile, truck, body and fender repair shops, including painting and incidental upholstery and glass repair
Automobile, truck, motor home, mobile home, camper, and trailer sales and/or rental agency - including parts departments, repair shops, and canopy sales. Includes canopy installation by dealers subject to this subclassification. This subclassification also includes passenger shuttle services done in connection with rental or repair services
Automobile or truck: Repair shops or garages - including parts departments
Automobile or truck service specialty shops - including sales, installation and repair of air conditioning systems, electrical systems, cruise controls, mufflers, and sun roofs
Boat dealers - including repair shops and parts departments
Marinas and boat house operations - including repair shops and parts departments
Motor home - service and repair shops including parts departments
This classification will include mobile home delivery and set-up when done by employees of the mobile home sales agency.
Contractors doing set-up and delivery of mobile homes who are not employees of the mobile home sales agency will be rated under risk classification 0517 (WAC 296-17-52109).

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-579, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-579, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-579, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-579, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-579, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-579, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-579, filed 11/29/82, effective 1/1/83; Order 75-38, § 296-17-579, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-579, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-580 Classification 3402.

Abrasive wheel manufacturing
Air compressor manufacturing or assembly, elevator manufacturing, gear grinding or manufacturing
Automobile or truck, radiator and heater core manufacturing and repair shops
Auto body manufacturing - truck, trailer, bus body manufacturing, travel trailer body repair
Auto or motorcycle manufacturing or assembly
Auto or truck engine manufacturing, aircraft engine manufacturing or rebuild, N.O.C.
Auto or truck parts, machining or rebuild not in vehicle
Battery manufacturing, assembly and repair: Storage type
Bed spring or wire mattress manufacturing
Confectioners machinery manufacturing or assembly, food processing machinery manufacturing or assembly, precision machined parts, N.O.C., manufacturing
Coppersmithing, shop
Die castings manufacturing
Furnace, heater or radiator manufacturing
Heat treating metal
Lead burning, metal spraying - copper
Machinery manufacturing or assembly, N.O.C.

Machine shops, N.O.C., including mobile shops, tool sharpening and marine engine repair
Nut, bolt, screw, nail, tack, rivet, eyelet, spike and needle manufacturing, N.O.C.
Office machinery manufacturing or assembly, N.O.C., cash register and sewing machine manufacturing or assembly
Photo processing machinery manufacturing or assembly
Power saw, lawn and garden equipment and small motor repair, N.O.C.
Printing or bookbinding machinery manufacturing or assembly
Pump manufacturing or assembly, safe manufacturing or assembly, scale manufacturing or assembly including repair, auto jack manufacturing or assembly, water meter manufacturing or assembly including repair
Saw manufacturing or assembly
Sewing machine, commercial - repair and rebuild
Shoe machinery manufacturing or assembly, sprinkler head manufacturing or assembly, textile machinery manufacturing or assembly
Small arms, speedometer and carburetor manufacturing or assembly including rebuild
Tool manufacturing, machine finishing
Tool manufacturing, not hot forming or stamping, die manufacturing - ferrous
Valve manufacturing
Welding or cutting, N.O.C. including mobile operations
Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification 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
This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations rated within this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-582 Classification 3404.

Aluminum ware manufacturing - from sheet aluminum
Auto or truck parts manufacturing or assembly N.O.C. - miscellaneous stamped parts
Awning manufacturing or assembly - metal
Brass or copper goods manufacturing
Cans manufacturing - aluminum or galvanized
Coffin-casket manufacturing or assembly, other than wood
Electric or gas lighting fixtures, lampshades or lantern manufacturing or assembly - metal
Furniture, shower-door, showcases - not wood - manufacturing or assembly
Galvanized iron works, manufacturing - not structural
Hardware manufacturing, N.O.C.
Metal goods manufacturing, N.O.C., from material lighter than 9 gauge
Metal stamping, including plating and polishing
Sign manufacturing - metal
Ski manufacturing and toboggan manufacturing other than wood
Stove manufacturing, excluding wood stove manufacturing and other stoves made from material 9 gauge or heavier rated under risk classification 5209 (WAC 296-17-67602)
Water heater manufacturing or assembly
Window, sash or door manufacturing or assembly - aluminum
Physically separate upholstery departments of firms engaged in furniture, coffin or casket manufacturing, assembly, or finishing may be separately rated under risk classification 3808 (WAC 296-17-612), and in accordance with WAC 296-17-410
Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification 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
This classification includes the repair of items being manufactured or assembled when done by employees of an employer having operations rated in this classification when the repair is done as a part of and in connection with the manufacturing or assembly operation.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-582, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-582, filed 5/31/88, effective 7/1/88; 87-24-060 (Order 87-26), § 296-17-582, filed 12/1/87, effective 1/1/88; 85-24-032 (Order 85-33), § 296-17-582, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-582, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-582, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-582, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-582, filed 11/13/80, effective 1/1/81; Order 75-38, § 296-17-582, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-582, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-58201 Classification 3405.

Aircraft parts manufacturing, N.O.C.
For the purpose of this rule; aircraft parts means the component parts making the aircraft operative and becoming part of the aircraft when being manufactured by the aircraft manufacturing company
Provided that this classification will not be assigned to an employer who has operations rated in risk classification 3402 (WAC 296-17-580); risk classification 3404 (WAC 296-17-582); risk classification 3510 (WAC 296-17-59202); 3511 (WAC 296-17-55203); 3512 (WAC 296-17-59204); or risk classification 5201 (WAC 296-17-670) unless such operations are conducted as a distinct and separate business undertaking and rated in accordance with WAC 296-17-390
This is a shop or plant only classification but does contemplate work being performed in an adjacent yard when

operated by an employer having operations subject to this classification.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-58201, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-58201, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-58201, filed 2/28/85, effective 4/1/85; 81-24-042 (Order 81-30), § 296-17-58201, filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-58201, filed 11/27/78, effective 1/1/79.]

### WAC 296-17-584 Classification 3407.

Asphalt, bitumen dealers
Asphalt or tar, distilling or refining
Asphalt paving material - manufacturing
Asphalt roofing material - manufacturing
Gas dealers, liquified petroleum gas, gas works, all operations
Gas or oil dealers, wholesale or retail, including fuel oil, propane or butane
Gasohol distilling or refining
Gasoline recovery from casing head or natural gas
Oil or gas lease work, N.O.C. - by contractors - not lease operation
Oil or gas pipe line operation
Oil or gas wells - cementing
Oil or gas wells - installation or recovery of casing
Oil or gas wells - specialty tool operation, N.O.C., by contractor
Oil refining-petroleum, including manufacturing of products obtained therefrom
Oil wells operation - oil or gas lease operators
Synthetic rubber manufacturing.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-584, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-584, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-584, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-584, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-58502 Classification 3410.

Convenient grocery stores or mini markets with self-service gasoline operations.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-58502, filed 5/31/93, effective 7/1/93.]

### WAC 296-17-594 Classification 3602.

Camera manufacturing or assembly including repair in shop
Dental laboratories
Electric cordset radio and ignition assembly
Electronic circuit board assembly, N.O.C.
Electronic products manufacturing; resistors, capacitors, chip and relays manufacturing
Fishing tackle manufacturing, N.O.C., including assembly
Incandescent lamp manufacturing, electric tube or transistor manufacturing
Instrument manufacturing, scientific, medical or professional
Jewelry manufacturing or engraving
Magnetic tape manufacturing
Motion picture projectors manufacturing or assembly including repair in shop
Musical instrument repair - metal
Silverware manufacturing, watch case manufacturing
Sound recording equipment, thermometer and steam gauge manufacturing
Stereo components manufacturing or assembly
Tag, button, zipper or fastener manufacturing, bottle cap manufacturing
Telegraph or radio apparatus manufacturing, N.O.C.
Telephone set manufacturing or repair, N.O.C.
Trophy engraving
Watch manufacturing
This is a shop or plant only classification although the classification allows for repair work when specified it is contemplated that such repairs are limited to those brought into the shop by the customer or sent through a common carrier. This classification excludes all outside repair work
This classification does not apply to the production of raw material for use in the manufacturing of the above articles.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-594, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-594, filed 5/31/88, effective 7/1/88; 85-24-032 (Order 85-33), § 296-17-594, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-594, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-594, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-594, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-594, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-594, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-594, filed 11/30/79, effective 1/1/80; Order 75-38, § 296-17-594, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-594, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-604 Classification 3708.

Abrasive cloth preparation
Awning, tent, sail, flag, wind sock or sleeping bag: Manufacturing
Bag or sack - industrial size: Manufacturing or renovating - cotton, burlap, gunny, nylon, or textile
Braid, net, plush and velvet, thread, webbing and yarn: Manufacturing
Broom and brush: Manufacturing or assembly
Carpet or rug: Manufacturing
Cordage, rope or twine: Manufacturing
Cotton batting, wadding or waste: Manufacturing
Cotton cord or cotton twine: Manufacturing
Fire hose: Manufacturing from linen thread
Fishing rod wrappings: Manufacturing
Life preservers and canvas goods: Manufacturing, N.O.C.
Linoleum, oil cloth or imitation leather: Manufacturing
Match: Manufacturing
Mattress or box springs: Manufacturing - no manufacturing wire springs or excelsior
Nylon or synthetic goods: Manufacturing, N.O.C.
Parachutes, suspenders, fur goods and bandages: Manufacturing
Pillow, quilt or cushion: Manufacturing including stuffed animal or doll manufacturing
Spinning or weaving - natural or synthetic fibres, N.O.C.
Taxidermists and hide pelting
Textile: Manufacturing, N.O.C.
Wader, wet suit, and survival suit: Manufacturing
Wool combing or scouring.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-604, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-604, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 87-24-060 (Order 87-26), § 296-17-604, filed 12/1/87, effective 1/1/88; 85-24-032 (Order 85-33), § 296-17-604, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-604, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-604, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-604, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-606 Classification 3802.

Artificial feather or flower: Manufacturing, N.O.C.
Clothing or cloth goods: Manufacturing, N.O.C.
Cloth printing
Computer covers and accessories: Manufacturing, N.O.C. - cotton, nylon, or other textiles
Dressmaking or tailoring
Fabric: Coating, impregnating or waterproofing, N.O.C.
Gloves: Manufacturing, N.O.C.
Handbags or packs: Manufacturing - cotton, nylon, or other textile
Hosiery: Manufacturing
Lace, embroidery, cloth hats, umbrella and draperies: Manufacturing
Millinery: Manufacturing
Textiles: Bleaching, dyeing, or finishing - new goods, not garments
Wig making.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-606, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-606, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-606, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-606, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-606, filed 11/29/82, effective 1/1/83; Order 75-38, § 296-17-606, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-606, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-618 Classification 3905.

Cocktail and soft drink lounges
Commissaries and restaurants with construction, erection, logging or mine operations
Eating establishments, N.O.C., such as public lunch counters in stores, ice cream parlors, popcorn stores or stands, and retail candy stores with on premise manufacturing
Espresso/coffee stands and carts
Food, drink, candy, etc. concessionaires at parks, tracks and exhibitions including vending concessionaires dispensing food, drink, candy, etc. at ball parks, race tracks, theatres and exhibitions
Restaurants and taverns
This classification is not applicable to street vendors or route food services who shall be rated under class 1101 (WAC 296-17-536).

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-618, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-618, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-618, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-618, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-618, filed 11/29/82, effective 1/1/83; Order 75-38, § 296-17-618, filed 11/24/75, effective 1/1/76; Order 74-40, § 296-17-618, filed 11/27/74, effective 1/1/75; Order 73-22, § 296-17-618, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-61804 Classification 3909.

Caterers
Meals on wheels
This classification excludes route food services reported separately, in risk classification 1101.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-61804, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-61804, filed 11/27/85, effective 1/1/86; 82-24-047 (Order 82-38), § 296-17-61804, filed 11/29/82, effective 1/1/83.]

### WAC 296-17-646 Classification 4805.

Christmas tree sales from u-cut farms or retail sales lots
Nurseries - including incidental greenhouse operations
This classification applies to all acreage devoted to nursery operations including tree nurseries and sod growing
Classification 4805 and classification 5004 shall not be assigned to the same risk unless the operations described by these classifications are conducted as separate and distinct businesses and each business has separate and distinct employees.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-646, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-646, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-646, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-646, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-646, 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), § 296-17-646, filed 11/27/78, effective 1/1/79; Order 75-38, § 296-17-646, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-646, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-669 Classification 5109.

Heavy arms: Manufacturing or repair
Heavy machinery and equipment: Manufacturing or repair
Press rollers: Recoating or resurfacing
Locomotive engine: Manufacturing or repair.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-669, filed 5/31/93, effective 7/1/93; 91-12-014, § 296-17-669, filed 5/31/91, effective 7/1/91. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-669, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-669, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-669, filed 11/30/83, effective 1/1/84; 80-17-016 (Order 80-23), § 296-17-669, filed 11/13/80, effective 1/1/81; Order 75-38, § 296-17-669, filed 11/24/75, effective 1/1/76; Order 73-22, § 296-17-669, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-676 Classification 5207.

Bowling centers
Skating rinks - ice or roller
This classification includes food and beverage operations.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-676, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-676, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-676, filed 2/28/85, effective 4/1/85; 81-24-042 (Order 81-30), § 296-17-676, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-676, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-67601 Classification 5208.

Brass, bronze, iron-ornamental - shop fabricating, assembly and manufacturing

Iron or steel works, shop, fabricate or assemble structural iron or steel

Iron works - shop - fabricate, assemble or manufacture nonstructural iron or steel

Iron works - shop - manufacturing railings, staircases, fire escapes, etc.

Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification 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 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-67601, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-67601, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-67601, filed 2/28/85, effective 4/1/85; 82-24-047 (Order 82-38), § 296-17-67601, filed 11/29/82, effective 1/1/83.]

### WAC 296-17-67602 Classification 5209.

Boilermaking, tank building (shop)

Metal goods manufacturing, N.O.C., from material 9 gauge or heavier

Wood stove manufacturing

Unless otherwise specified in the subclassification wording this is a shop or plant only classification. This classification 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 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-67602, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-67602, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-67602, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-67602, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-67602, filed 11/29/82, effective 1/1/83.]

### WAC 296-17-686 Classification 6109.

Childbirth classes

Chiropractors, N.O.C.

Dental clinics, N.O.C.

Dentists, N.O.C.

Massage therapy services - This subclassification excludes massage practitioners employed by a health club, gymnasium, saunas or bath house which are to be reported separately in classification 6204

Medical clinics, N.O.C.

Midwife services

Naturopaths, N.O.C.

Optometrists, N.O.C.

Physical therapists, N.O.C.

Physicians and surgeons, N.O.C.

Psychologists and psychiatrists, N.O.C.

This classification includes clerical office and sales personnel.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-690 Classification 6204.

Baths or saunas, N.O.C.

Exercise or health institutes

Gymnasiums

Health clubs.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-690, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-690, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-690, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-690, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-690, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-690, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-700 Classification 6305.

Clothing stores - retail

Concessions for hat and coat checking

Shoe stores - retail

This classification includes clerical office and sales personnel.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-704 Classification 6309.

Automobile, truck, motorcycle accessory or replacement parts stores, wholesale/retail - excluding repairs

Bicycle stores - wholesale/retail, including repairs

Custom picture or u-frame stores - wholesale/retail, including repairs

Gun stores - wholesale/retail, including repairs

Hardware variety stores, N.O.C.: Wholesale/retail - excluding any operation that sells lumber or building materials which will be separately reported in risk classification 2009 and small engine repair which is to be separately reported in classification 3402

Locksmiths, including repairs but excluding installation of dead bolt locks or similar activities which will be separately reported in risk classification 0607

Stained art glass stores - wholesale/retail, excluding manufacturing

Wood stove and accessory stores - wholesale/retail excluding installations or repairs

This classification includes clerical office and sales personnel.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-707 Classification 6403.

Coffee, tea or spice stores - retail
Dairy products stores - retail
Fruit or vegetable stores - retail
Convenient grocery stores or mini markets - retail, N.O.C. excluding operations which include the sales of gasoline which are to be reported separately under classification 3410
This classification includes clerical office and sales personnel.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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.]

### WAC 296-17-708 Classification 6404.

Florists stores wholesale/retail
Balloon arrangement stores wholesale/retail
Plants: Interior household type - potted or planted, sales or leasing including plant watering and maintenance services associated with indoor plants
This classification includes clerical office and sales personnel.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-710 Classification 6406.

Baseball card stores - retail
Book, record, video stores - retail
Camera/photo supplies stores - retail
Candy, cigarette and tobacco stores - retail
Coin and stamp stores - retail
Coin operated arcades, excluding repair rated under risk classification 0606 (WAC 296-17-526)
Drug stores - retail
Dry cleaning - coin operated self service
Fabric and yardage stores, yarn and needle work stores - retail
Floor covering stores, carpet sample stores, retail - excluding installation which will be rated in risk classification 0502 (WAC 296-17-517)
Laundromats, coin operated self service
Microwave oven and stereo component stores - retail
Musical instrument stores - retail, excluding piano or organ stores which will be rated in risk classification 6306 (WAC 296-17-701)
News butchers or news/magazine stands - retail
Office stationery stores, and office machinery stores including microcomputer and copy machines excluding repair
Paint/wallpaper stores - retail
Pawn shops
Pet shops - retail including incidental pet grooming
Private mailbox, safety deposit box or computer tape storage facilities
Retail stores, N.O.C.
Sewing machine stores - retail
Sporting goods stores - retail
Telephone stores - retail
Variety and five and ten cent stores - retail
Wine stores and retail liquor agencies; soft drink stores
This classification includes clerical office and sales personnel, but excludes all on premise manufacturing of any kind, repair work, delivery drivers, outside installation, lunch counters and restaurant operations which are to be separately rated.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-715 Classification 6502.

Banking
Check cashing services
Credit unions
Financial institutions, N.O.C.
Investment companies
Loan companies
Mortgage companies
Savings and loan associations
Stock brokers and escrow companies
This classification includes clerical office and sales personnel.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-715, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-715, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-715, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-715, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-715, filed 11/30/83, effective 1/1/84; Order 73-22, § 296-17-715, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-721 Classification 6508.

Chore services
Domestic servants employed in or about the private residence of their employer. This classification excludes all temporary or intermittent domestic (residential) cleaning or janitorial services which are to be reported separately on risk classification 6602.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-721, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-721, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-721, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-721, filed 11/30/83, effective 1/1/84; 81-24-042 (Order 81-30), § 296-17-721, filed 11/30/81, effective 1/1/82; Order 73-22, § 296-17-721, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-724 Classification 6602.

Janitorial cleaning services, N.O.C. - including contract window cleaning

Janitors, N.O.C.

Pest control. This category applies to operations involved in the control and extermination of pests by the use of pesticides, rodenticides and fumigants

Portable cleaning and washing, N.O.C. - includes auto and truck washing, recreational vehicles and mobile homes. This category will include roof cleaning and washing of single story buildings, but only if the washing is not incidental to painting or roof repair

Residential cleaning or residential janitorial services

Swimming pool cleaning

Termite control. This category applies to operations involved in the control and extermination of termites and other wood-destroying pests or organisms by fumigation or spraying of poisonous insecticides. Does not include structural repair

Window washing services.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-724, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-724, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 87-12-032 (Order 87-12), § 296-17-724, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-724, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-724, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-724, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-724, filed 11/29/82, effective 1/1/83; Order 73-22, § 296-17-724, filed 11/9/73, effective 1/1/74.]

### WAC 296-17-747 Classification 6902.

Logging railroad construction or maintenance

Logging road construction or maintenance

For the purposes of this rule logging roads are roads for which the basic use is for the transporting of logs by truck. This classification includes roads constructed on public or private lands in connection with timber sales or logging, such as roads being constructed in accordance with the state department of natural resources or the United States Forest Service timber sales. Roads constructed subject to this classification are comprised of dirt and/or crushed rock. Operations covered include grading, grubbing, clearing of right-of-way and including culverts and bridges, but excludes falling, bucking of right-of-way timber or any of the other logging activities as enumerated under risk classification 5001 (WAC 296-17-659)

This classification excludes the construction of asphalt or concrete type roads which are to be reported separately in risk classification 0101 (WAC 296-17-501)

See risk classification 5206 (WAC 296-17-675) for permanent yard operations.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-747, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-747, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-747, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-747, filed 11/30/83, effective 1/1/84; Order 75-38, § 296-17-747, filed 11/24/75, effective 1/1/76.]

### WAC 296-17-758 Classification 7105.

Temporary help company: Office support services.

This classification applies to employees of a temporary help company who are assigned on a temporary basis to its customers and who are engaged wholly in office work for such customers. This classification includes occupations such as clerks, typists, receptionists, secretaries, accountants, actuaries, attorneys, bank tellers, bookkeepers, word processors, data entry and computer operators, programmers, drafters, designers, graphic artists, technical writers, technical illustrators, design engineers, library assistants, telemarketers, and dispatchers, prepress work for printers, bindery - collating by hand, and mail clerks who do not operate equipment. Mail clerks who operate equipment are to be reported separately in risk classification 7109. Employees subject to this classification are not required to physically be located in a clerical office. The test is whether or not they perform clerical office work as described in this classification. A division of worker hours is not permitted between this classification and any other classification.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-758, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-758, filed 5/31/88, effective 7/1/88; 87-12-032 (Order 87-12), § 296-17-758, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-758, filed 11/27/85, effective 1/1/86; 85-06-026 (Order 85-7), § 296-17-758, filed 2/28/85, effective 4/1/85; 83-24-017 (Order 83-36), § 296-17-758, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-758, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-758, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-758, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-758, filed 11/30/79, effective 1/1/80.]

### WAC 296-17-759 Classification 7106.

Temporary help company: Retail or wholesale store services.

This classification applies to employees of a temporary help company who are assigned on a temporary basis to its customers and who are engaged in activities related to a store operation as opposed to a warehouse or repackaging operation. Activities may include a combination of clerical type duties and those that require minimal physical lifting. This classification includes occupations such as cashiering, stocking, beauticians, gift wrappers, buyers, product demonstration, booth aids, modeling, outside sales, and inventory taking.

For the purposes of this section, inventory taking is limited to those services provided to store operations which are performed exclusively at ground level. Inventory taking utilizing ladders, step stools, or at any height or when performed for customers not engaged in store operations are to be reported separately in risk classification 7114 provided they do not operate equipment or machinery.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-759, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-759, filed 5/31/88, effective 7/1/88; 87-12-032 (Order 87-12), § 296-17-759, filed 5/29/87, effective 7/1/87; 85-24-032 (Order 85-33), § 296-17-759, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-759, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-759, filed 11/29/82, effective 1/1/83; 80-17-016 (Order 80-23), § 296-17-759, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-759, filed 11/30/79, effective 1/1/80.]

### WAC 296-17-761 Classification 7108.

Temporary help company: Packaging and repackaging of dry goods such as clothing, wearing apparel, textile, and

related articles of trade; retail products such as books, china, and glassware; and pharmaceuticals as part of the distribution and preshipping process

This classification applies to employees of a temporary help company who are assigned on a temporary basis to its customers and who are engaged in warehousing or repackaging of items such as clothing, fabric, yarn, shoes, glassware, art, linens, kitchenware, drugs and pharmaceutical preparations, computer discs, bulk film or cassette tapes and records. This classification excludes any assembly or freight handling of wood, metal, plastic, or masonry products to be reported separately in risk classification 7114 provided they do not operate equipment or machinery.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-761, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-761, filed 5/31/88, effective 7/1/88; 87-12-032 (Order 87-12), § 296-17-761, filed 5/29/87, effective 7/1/87; 86-12-041 (Order 86-18), § 296-17-761, filed 5/30/86, effective 7/1/86; 85-24-032 (Order 85-33), § 296-17-761, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-761, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-761, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-761, filed 11/30/81, effective 1/1/82; 80-17-016 (Order 80-23), § 296-17-761, filed 11/13/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-761, filed 11/30/79, effective 1/1/80.]

### WAC 296-17-762 Classification 7109.

Temporary help company: Electronic, precision, and scientific equipment assembly and nonfield technician services.

This classification applies to employees of a temporary help company assigned on a temporary basis to its customers engaged in the assembly of electronic or biomedical equipment and employees engaged in printing and bindery work. This classification includes occupations such as electronic assemblers, mechanical assemblers, electro-mechanical assemblers, quality control inspectors, test technicians, kit pullers, storekeepers, upholsterers, laboratory technicians, printers, offset operators, lead typesetters, and bindery workers.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-762, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-762, filed 5/31/88, effective 7/1/88; 85-24-032 (Order 85-33), § 296-17-762, filed 11/27/85, effective 1/1/86; 83-24-017 (Order 83-36), § 296-17-762, filed 11/30/83, effective 1/1/84; 82-24-047 (Order 82-38), § 296-17-762, filed 11/29/82, effective 1/1/83; 81-24-042 (Order 81-30), § 296-17-762, filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-762, filed 11/30/79, effective 1/1/80.]

### WAC 296-17-76201 Classification 7110.

Temporary help company: Field engineer and field technician services.

This classification applies to employees of a temporary help company assigned on a temporary basis to its customers who are engaged in duties away from the customers premises and who are providing field engineering, field technician, traffic counters and surveying services, telephone installation and service within buildings, vending machine service and parking lot or garage attendants, weigh scale attendants, and service station attendants excluding mechanics.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-76201, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-76201, filed 5/31/88, effective 7/1/88.]

### WAC 296-17-76202 Classification 7111.

Temporary help company: Health care, medical laboratory, quality control services, testing laboratories, N.O.C., homemaker services and home health services.

This classification applies to employees of a temporary help company who are assigned on a temporary basis to its customers and who are providing health care services and includes such employments as therapists, nurses, nurses aides, physicians, dental hygienists, laboratory technicians and assistants.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-76202, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-76202, filed 5/31/88, effective 7/1/88.]

### WAC 296-17-76204 Classification 7113.

Temporary help company: Janitorial, plant or facility supplemental maintenance and groundskeeping services.

This classification applies to employees of a temporary help company assigned on a temporary basis to its customers and who are engaged in janitorial work, preoccupancy building cleanup, plant maintenance, and groundskeeping or grounds maintenance work to an existing landscape such as mowing lawns, pruning shrubs and weeding as compared to new landscape construction work. Landscape workers involved exclusively in hand labor work such as raking, digging, using wheel barrow to haul soil, beauty bark or decorative rock, whether performed as maintenance of existing landscape or new landscape work are subject to this risk classification (7113). Separately report employees engaged in exterior window cleaning, debris or building material cleanup and removal, and new landscape construction (i.e., clearing of land, installation of underground sprinkler systems, moving boulders) in risk classification 7118. Tree removal to be reported separately in risk classification 7121. A division of worker hours is not permitted between this classification and any other classification.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-76204, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-76204, filed 5/31/88, effective 7/1/88.]

### WAC 296-17-76205 Classification 7114.

Temporary help company: Assembly work and freight handling, N.O.C.

This classification applies to employees of a temporary help company assigned on a temporary basis to customers of a temporary help company engaged in the assembly of wood, metal, plastic, or masonry products during shipping or receiving; and freight handling such as furniture, tires, and other products made of wood, metal, plastic, or masonry products during shipping and receiving. Employees assigned this classification could use small power driven hand tools in the assembly process, and nonpower pallet jacks and hand trucks for

the freight handling activity. This classification also includes inventory takers, N.O.C. Employees whose duties include the operation of power driven equipment or machinery, although they may also be engaged in assembly work or freight handling activities, are to be reported without division of hours in risk classification 7117.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-76205, filed 5/31/93, effective 7/1/93. Statutory Authority: RCW 51.16.035. 88-12-050 (Order 88-06), § 296-17-76205, filed 5/31/88, effective 7/1/88.]

**WAC 296-17-777 Classification 7307.**

Christmas tree farms - all operations including planting, pruning, harvesting, baling, packing and delivery

Retail operations (i.e., cashiers, parking attendants, customer assistants, etc.) of Christmas tree u-cut farms or retail sales lots are to be reported separately in classification 4805

Classification 7307 and classification 5004 shall not be assigned to the same risk unless the operations described by these classifications are conducted as separate and distinct businesses and each business has separate and distinct employees.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-777, filed 5/31/93, effective 7/1/93; 89-24-051 (Order 89-22), § 296-17-777, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.16.035. 85-24-032 (Order 85-33), § 296-17-777, filed 11/27/85, effective 1/1/86; 82-24-047 (Order 82-38), § 296-17-777, filed 11/29/82, effective 1/1/83.]

**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:

$$\text{MODIFICATION} = \frac{Ap + WAe + (1\text{-}W)\ Ee + B}{E + B}$$

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 $8,809 the primary actual loss shall be determined from the formula:

$$\text{PRIMARY LOSS} = \frac{22{,}022}{\text{Total loss} + 13{,}213} \times \text{total loss}$$

Primary actual losses for selected claim values are shown in Table I. For each claim less than $8,809 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. 93-24-114, § 296-17-855, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 54.16.035. 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 296-17-873 Responsibility for past experience.** WAC 296-17-87301 through 296-17-87306 shall be used to determine the assignment of past loss experience associated with a change in business ownership for experience rating purposes. It is the intent of these rules that every firm (business) shall be responsible for its past experience irrespective of ownership as long as the firm (business) continues to conduct operations which are subject to Washington Workers' Compensation Act. When a business or portion of a business is sold, the new owner or owners of such business or portion thereof shall also take over the past loss experience associated with the business unless another treatment is specified in these rules.

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-873, filed 5/31/93, effective 7/1/93; 90-20-092, § 296-17-873, filed 10/1/90, effective 11/1/90; 89-24-051 (Order 89-22), § 296-17-873, filed 12/1/89, effective 1/1/90. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-17-873, filed 11/30/79, effective 1/1/80.]

**WAC 296-17-875 Table I.**

**Primary Losses for Selected Claim Values**

| CLAIM VALUE | PRIMARY LOSS |
|---|---|
| 8,809 | 8,809 |
| 9,132 | 9,000 |
| 10,991 | 10,000 |
| 13,187 | 11,000 |
| 15,821 | 12,000 |
| 19,039 | 13,000 |
| 23,060 | 14,000 |
| 28,225 | 15,000 |
| 44,728 | 17,000 |
| 142,757* | 20,156 |
| 220,220** | 20,775 |

* Average death value

** Maximum claim value

[Statutory Authority: RCW 51.04.020. 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. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 78-12-043 (Order 78-23), § 296-17-875, filed 11/27/78, effective 1/1/79; 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 = $220,220
Average Death Value = $142,757

| Expected Losses | | | B | W |
|---|---|---|---|---|
| 4,771 | & | Under | 41,550 | 0.00 |
| 4,772 | - | 9,613 | 41,135 | 0.01 |
| 9,614 | - | 14,528 | 40,719 | 0.02 |
| 14,529 | - | 19,518 | 40,304 | 0.03 |
| 19,519 | - | 24,583 | 39,888 | 0.04 |
| 24,584 | - | 29,727 | 39,473 | 0.05 |
| 29,728 | - | 34,951 | 39,057 | 0.06 |
| 34,952 | - | 40,257 | 38,642 | 0.07 |
| 40,258 | - | 45,648 | 38,226 | 0.08 |
| 45,649 | - | 51,125 | 37,811 | 0.09 |
| 51,126 | - | 56,690 | 37,395 | 0.10 |
| 56,691 | - | 62,347 | 36,980 | 0.11 |
| 62,348 | - | 68,098 | 36,564 | 0.12 |
| 68,099 | - | 73,945 | 36,149 | 0.13 |
| 73,946 | - | 79,890 | 35,733 | 0.14 |
| 79,891 | - | 85,937 | 35,318 | 0.15 |
| 85,938 | - | 92,088 | 34,902 | 0.16 |
| 92,089 | - | 98,346 | 34,487 | 0.17 |
| 98,347 | - | 104,715 | 34,071 | 0.18 |
| 104,716 | - | 111,197 | 33,656 | 0.19 |
| 111,198 | - | 117,796 | 33,240 | 0.20 |
| 117,797 | - | 124,515 | 32,825 | 0.21 |
| 124,516 | - | 131,357 | 32,409 | 0.22 |
| 131,358 | - | 138,326 | 31,994 | 0.23 |
| 138,327 | - | 145,427 | 31,578 | 0.24 |
| 145,428 | - | 152,663 | 31,163 | 0.25 |
| 152,664 | - | 160,038 | 30,747 | 0.26 |
| 160,039 | - | 167,556 | 30,332 | 0.27 |
| 167,557 | - | 175,223 | 29,916 | 0.28 |
| 175,224 | - | 183,042 | 29,501 | 0.29 |
| 183,043 | - | 191,018 | 29,085 | 0.30 |
| 191,019 | - | 199,157 | 28,670 | 0.31 |
| 199,158 | - | 207,464 | 28,254 | 0.32 |
| 207,465 | - | 215,945 | 27,839 | 0.33 |
| 215,946 | - | 224,605 | 27,423 | 0.34 |
| 224,606 | - | 233,450 | 27,008 | 0.35 |
| 233,451 | - | 242,486 | 26,592 | 0.36 |
| 242,487 | - | 251,721 | 26,177 | 0.37 |
| 251,722 | - | 261,161 | 25,761 | 0.38 |
| 261,162 | - | 270,813 | 25,346 | 0.39 |
| 270,814 | - | 280,685 | 24,930 | 0.40 |
| 280,686 | - | 290,785 | 24,515 | 0.41 |
| 290,786 | - | 301,121 | 24,099 | 0.42 |
| 301,122 | - | 311,703 | 23,684 | 0.43 |
| 311,704 | - | 322,538 | 23,268 | 0.44 |
| 322,539 | - | 333,637 | 22,853 | 0.45 |
| 333,638 | - | 345,010 | 22,437 | 0.46 |
| 345,011 | - | 356,668 | 22,022 | 0.47 |
| 356,669 | - | 368,621 | 21,606 | 0.48 |
| 368,622 | - | 380,882 | 21,191 | 0.49 |
| 380,883 | - | 393,464 | 20,775 | 0.50 |
| 393,465 | - | 406,378 | 20,360 | 0.51 |
| 406,379 | - | 419,640 | 19,944 | 0.52 |
| 419,641 | - | 433,264 | 19,529 | 0.53 |
| 433,265 | - | 447,265 | 19,113 | 0.54 |
| 447,266 | - | 461,660 | 18,698 | 0.55 |

| | | | | |
|---|---|---|---|---|
| 461,661 | - | 476,466 | 18,282 | 0.56 |
| 476,467 | - | 491,701 | 17,867 | 0.57 |
| 491,702 | - | 507,386 | 17,451 | 0.58 |
| 507,387 | - | 523,541 | 17,036 | 0.59 |
| 523,542 | - | 540,187 | 16,620 | 0.60 |
| 540,188 | - | 557,348 | 16,205 | 0.61 |
| 557,349 | - | 575,050 | 15,789 | 0.62 |
| 575,051 | - | 593,319 | 15,374 | 0.63 |
| 593,320 | - | 612,183 | 14,958 | 0.64 |
| 612,184 | - | 631,672 | 14,543 | 0.65 |
| 631,673 | - | 651,818 | 14,127 | 0.66 |
| 651,819 | - | 672,657 | 13,712 | 0.67 |
| 672,658 | - | 694,226 | 13,296 | 0.68 |
| 694,227 | - | 716,564 | 12,881 | 0.69 |
| 716,565 | - | 739,713 | 12,465 | 0.70 |
| 739,714 | - | 763,721 | 12,050 | 0.71 |
| 763,722 | - | 788,636 | 11,634 | 0.72 |
| 788,637 | - | 814,511 | 11,219 | 0.73 |
| 814,512 | - | 841,405 | 10,803 | 0.74 |
| 841,406 | - | 869,380 | 10,388 | 0.75 |
| 869,381 | - | 898,503 | 9,972 | 0.76 |
| 898,504 | - | 928,848 | 9,556 | 0.77 |
| 928,849 | - | 960,494 | 9,141 | 0.78 |
| 960,495 | - | 993,528 | 8,725 | 0.79 |
| 993,529 | - | 1,028,045 | 8,310 | 0.80 |
| 1,028,046 | - | 1,064,147 | 7,894 | 0.81 |
| 1,064,148 | - | 1,101,949 | 7,479 | 0.82 |
| 1,101,950 | - | 1,141,575 | 7,063 | 0.83 |
| 1,141,576 | - | 1,183,162 | 6,648 | 0.84 |
| 1,183,163 | - | 1,226,860 | 6,232 | 0.85 |
| 1,226,861 | - | 1,272,835 | 5,817 | 0.86 |
| 1,272,836 | - | 1,321,274 | 5,401 | 0.87 |
| 1,321,275 | - | 1,372,380 | 4,986 | 0.88 |
| 1,372,381 | - | 1,426,383 | 4,570 | 0.89 |
| 1,426,384 | - | 1,483,539 | 4,155 | 0.90 |
| 1,483,540 | - | 1,544,133 | 3,739 | 0.91 |
| 1,544,134 | - | 1,608,488 | 3,324 | 0.92 |
| 1,608,489 | - | 1,676,968 | 2,908 | 0.93 |
| 1,676,969 | - | 1,749,986 | 2,493 | 0.94 |
| 1,749,987 | - | 1,828,011 | 2,077 | 0.95 |
| 1,828,012 | - | 1,911,580 | 1,662 | 0.96 |
| 1,911,581 | - | 2,001,308 | 1,246 | 0.97 |
| 2,001,309 | - | 2,097,906 | 831 | 0.98 |
| 2,097,907 | - | 2,202,199 | 415 | 0.99 |
| 2,202,200 & Over | | | 0 | 1.00 |

[Statutory Authority: RCW 51.04.020. 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
### Expected Loss Rates in Dollars Per Worker Hour for Indicated Fiscal Year

| Class | 1990 | 1991 | 1992 | D-Ratio |
|---|---|---|---|---|
| 0101 | 1.1262 | 1.1148 | 1.0609 | 0.400 |
| 0102 | 1.0577 | 1.0484 | 0.9992 | 0.440 |
| 0103 | 1.2838 | 1.2771 | 1.2205 | 0.477 |
| 0104 | 1.6247 | 1.6044 | 1.5228 | 0.321 |
| 0105 | 1.0921 | 1.0867 | 1.0388 | 0.479 |
| 0106 | 3.9080 | 3.9003 | 3.7284 | 0.391 |
| 0107 | 1.0379 | 1.0278 | 0.9789 | 0.435 |
| 0108 | 0.9759 | 0.9649 | 0.9181 | 0.435 |
| 0109 | 3.6732 | 3.6280 | 3.4472 | 0.403 |
| 0201 | 1.9883 | 1.9638 | 1.8653 | 0.377 |
| 0202 | 2.3971 | 2.3810 | 2.2724 | 0.444 |
| 0206 | 2.0032 | 1.9722 | 1.8700 | 0.379 |
| 0301 | 0.5084 | 0.5078 | 0.4872 | 0.541 |
| 0302 | 1.6674 | 1.6468 | 1.5645 | 0.379 |
| 0306 | 0.8743 | 0.8671 | 0.8267 | 0.435 |
| 0307 | 0.6730 | 0.6697 | 0.6404 | 0.475 |
| 0403 | 1.1559 | 1.1515 | 1.1018 | 0.490 |
| 0502 | 0.9532 | 0.9438 | 0.8988 | 0.443 |
| 0504 | 1.1960 | 1.1837 | 1.1267 | 0.416 |
| 0506 | 3.4745 | 3.4369 | 3.2698 | 0.415 |
| 0507 | 2.5634 | 2.5415 | 2.4227 | 0.442 |
| 0508 | 2.6035 | 2.5685 | 2.4383 | 0.370 |
| 0509 | 1.6530 | 1.6370 | 1.5579 | 0.381 |
| 0510 | 1.2340 | 1.2259 | 1.1705 | 0.460 |
| 0511 | 1.0032 | 0.9977 | 0.9544 | 0.530 |
| 0512 | 1.5130 | 1.4986 | 1.4273 | 0.421 |
| 0513 | 0.6417 | 0.6375 | 0.6085 | 0.442 |
| 0514 | 1.2340 | 1.2259 | 1.1705 | 0.466 |
| 0515 | 2.0408 | 2.0150 | 1.9145 | 0.398 |
| 0516 | 1.2340 | 1.2259 | 1.1705 | 0.466 |
| 0517 | 1.6043 | 1.5961 | 1.5248 | 0.451 |
| 0518 | 1.4748 | 1.4577 | 1.3859 | 0.397 |
| 0519 | 1.3622 | 1.3575 | 1.2978 | 0.430 |
| 0601 | 0.5440 | 0.5415 | 0.5180 | 0.489 |
| 0602 | 0.3481 | 0.3465 | 0.3316 | 0.533 |
| 0603 | 0.6744 | 0.6690 | 0.6374 | 0.403 |
| 0604 | 0.9385 | 0.9363 | 0.8966 | 0.478 |
| 0606 | 0.2255 | 0.2270 | 0.2191 | 0.609 |
| 0607 | 0.2397 | 0.2408 | 0.2319 | 0.570 |
| 0608 | 0.2346 | 0.2350 | 0.2258 | 0.542 |
| 0701 | 1.9674 | 1.9328 | 1.8287 | 0.335 |
| 0803 | 0.3037 | 0.3033 | 0.2908 | 0.519 |
| 0804 | 0.7731 | 0.7671 | 0.7315 | 0.432 |
| 0901 | 1.4314 | 1.4185 | 1.3511 | 0.404 |
| 1002 | 0.8036 | 0.8001 | 0.7655 | 0.499 |
| 1003 | 0.5150 | 0.5122 | 0.4895 | 0.472 |
| 1004 | 0.5150 | 0.5122 | 0.4895 | 0.472 |
| 1005 | 3.6532 | 3.6084 | 3.4302 | 0.426 |
| 1007 | 0.2386 | 0.2390 | 0.2294 | 0.498 |
| 1101 | 0.4774 | 0.4769 | 0.4574 | 0.522 |
| 1102 | 1.0321 | 1.0228 | 0.9747 | 0.436 |
| 1103 | 0.3976 | 0.3984 | 0.3829 | 0.535 |
| 1104 | 0.4854 | 0.4865 | 0.4679 | 0.564 |
| 1106 | 0.2059 | 0.2081 | 0.2014 | 0.601 |
| 1108 | 0.3711 | 0.3723 | 0.3580 | 0.508 |
| 1109 | 0.6315 | 0.6329 | 0.6079 | 0.509 |
| 1301 | 0.2738 | 0.2737 | 0.2627 | 0.545 |
| 1303 | 0.1689 | 0.1685 | 0.1614 | 0.529 |
| 1304 | 0.0202 | 0.0204 | 0.0196 | 0.550 |
| 1305 | 0.2838 | 0.2850 | 0.2745 | 0.584 |
| 1401 | 0.5712 | 0.5712 | 0.5480 | 0.517 |

| | | | | |
|---|---|---|---|---|
| 1404 | 0.4512 | 0.4501 | 0.4312 | 0.517 |
| 1405 | 0.4648 | 0.4650 | 0.4464 | 0.507 |
| 1501 | 0.3286 | 0.3277 | 0.3139 | 0.525 |
| 1507 | 0.2668 | 0.2671 | 0.2567 | 0.559 |
| 1701 | 1.4270 | 1.4092 | 1.3381 | 0.353 |
| 1702 | 1.4270 | 1.4092 | 1.3381 | 0.353 |
| 1703 | 0.3613 | 0.3593 | 0.3436 | 0.508 |
| 1704 | 0.7375 | 0.7327 | 0.6988 | 0.407 |
| 1801 | 0.8229 | 0.8154 | 0.7770 | 0.440 |
| 1802 | 0.7619 | 0.7580 | 0.7249 | 0.510 |
| 2002 | 0.5210 | 0.5226 | 0.5026 | 0.539 |
| 2003 | 0.3655 | 0.3666 | 0.3527 | 0.560 |
| 2004 | 0.6062 | 0.6060 | 0.5814 | 0.522 |
| 2007 | 0.3785 | 0.3803 | 0.3658 | 0.505 |
| 2008 | 0.2258 | 0.2254 | 0.2159 | 0.488 |
| 2009 | 0.2461 | 0.2467 | 0.2371 | 0.524 |
| 2101 | 0.5650 | 0.5643 | 0.5406 | 0.479 |
| 2102 | 0.3655 | 0.3666 | 0.3527 | 0.560 |
| 2104 | 0.2586 | 0.2602 | 0.2510 | 0.599 |
| 2105 | 0.4549 | 0.4532 | 0.4338 | 0.517 |
| 2106 | 0.3365 | 0.3369 | 0.3235 | 0.516 |
| 2201 | 0.2078 | 0.2079 | 0.1995 | 0.499 |
| 2202 | 0.4871 | 0.4890 | 0.4711 | 0.601 |
| 2203 | 0.2607 | 0.2614 | 0.2515 | 0.548 |
| 2401 | 0.3735 | 0.3746 | 0.3603 | 0.543 |
| 2903 | 0.5380 | 0.5398 | 0.5197 | 0.580 |
| 2904 | 0.5652 | 0.5653 | 0.5425 | 0.516 |
| 2905 | 0.4371 | 0.4388 | 0.4227 | 0.593 |
| 2906 | 0.3308 | 0.3298 | 0.3159 | 0.501 |
| 2907 | 0.4372 | 0.4374 | 0.4203 | 0.569 |
| 2908 | 0.8667 | 0.8664 | 0.8315 | 0.536 |
| 2909 | 0.4907 | 0.4918 | 0.4730 | 0.566 |
| 3101 | 0.6126 | 0.6085 | 0.5811 | 0.480 |
| 3102 | 0.2788 | 0.2795 | 0.2690 | 0.579 |
| 3103 | 0.5458 | 0.5432 | 0.5191 | 0.452 |
| 3104 | 0.4240 | 0.4232 | 0.4056 | 0.515 |
| 3105 | 0.8265 | 0.8234 | 0.7876 | 0.476 |
| 3303 | 0.2031 | 0.2036 | 0.1957 | 0.515 |
| 3304 | 0.5431 | 0.5447 | 0.5240 | 0.564 |
| 3309 | 0.3402 | 0.3424 | 0.3298 | 0.517 |
| 3401 | 0.3404 | 0.3403 | 0.3265 | 0.504 |
| 3402 | 0.3680 | 0.3682 | 0.3536 | 0.538 |
| 3403 | 0.1692 | 0.1692 | 0.1622 | 0.471 |
| 3404 | 0.3801 | 0.3815 | 0.3671 | 0.546 |
| 3405 | 0.2683 | 0.2684 | 0.2578 | 0.537 |
| 3406 | 0.1845 | 0.1858 | 0.1792 | 0.562 |
| 3407 | 0.2776 | 0.2773 | 0.2660 | 0.544 |
| 3408 | 0.0747 | 0.0747 | 0.0717 | 0.532 |
| 3409 | 0.0851 | 0.0855 | 0.0823 | 0.543 |
| 3410 | 0.1732 | 0.1749 | 0.1690 | 0.588 |
| 3501 | 0.7946 | 0.7906 | 0.7551 | 0.427 |
| 3503 | 0.2429 | 0.2456 | 0.2374 | 0.570 |
| 3506 | 0.6861 | 0.6813 | 0.6506 | 0.481 |
| 3509 | 0.3775 | 0.3790 | 0.3654 | 0.639 |
| 3510 | 0.3987 | 0.4002 | 0.3853 | 0.569 |
| 3511 | 0.5853 | 0.5856 | 0.5621 | 0.522 |
| 3512 | 0.3323 | 0.3347 | 0.3229 | 0.572 |
| 3602 | 0.0947 | 0.0955 | 0.0922 | 0.579 |
| 3603 | 0.3157 | 0.3176 | 0.3061 | 0.557 |
| 3604 | 1.1872 | 1.1835 | 1.1337 | 0.535 |
| 3605 | 0.3914 | 0.3912 | 0.3755 | 0.541 |
| 3701 | 0.2310 | 0.2313 | 0.2222 | 0.537 |
| 3702 | 0.4716 | 0.4715 | 0.4527 | 0.554 |
| 3707 | 0.3937 | 0.3945 | 0.3790 | 0.520 |
| 3708 | 0.2788 | 0.2795 | 0.2690 | 0.579 |
| 3801 | 0.2062 | 0.2063 | 0.1981 | 0.542 |
| 3802 | 0.1737 | 0.1742 | 0.1677 | 0.579 |
| 3808 | 0.2492 | 0.2492 | 0.2390 | 0.479 |
| 3901 | 0.1521 | 0.1533 | 0.1480 | 0.618 |
| 3902 | 0.4047 | 0.4064 | 0.3913 | 0.566 |
| 3903 | 0.9925 | 0.9974 | 0.9598 | 0.507 |
| 3905 | 0.1431 | 0.1448 | 0.1402 | 0.616 |
| 3906 | 0.4396 | 0.4403 | 0.4230 | 0.529 |
| 3909 | 0.2169 | 0.2182 | 0.2103 | 0.558 |
| 4002 | 0.5857 | 0.5842 | 0.5599 | 0.545 |
| 4101 | 0.1870 | 0.1875 | 0.1804 | 0.554 |
| 4103 | 0.2095 | 0.2112 | 0.2042 | 0.640 |
| 4107 | 0.1132 | 0.1137 | 0.1095 | 0.544 |
| 4108 | 0.1870 | 0.1875 | 0.1804 | 0.554 |
| 4109 | 0.1870 | 0.1875 | 0.1804 | 0.554 |
| 4201 | 0.2141 | 0.2136 | 0.2048 | 0.544 |
| 4301 | 0.6893 | 0.6900 | 0.6627 | 0.530 |
| 4302 | 0.5826 | 0.5795 | 0.5543 | 0.538 |
| 4304 | 0.5216 | 0.5231 | 0.5032 | 0.554 |
| 4305 | 0.8972 | 0.8912 | 0.8514 | 0.506 |
| 4401 | 0.4630 | 0.4631 | 0.4443 | 0.512 |
| 4402 | 0.5483 | 0.5498 | 0.5288 | 0.551 |
| 4404 | 0.4140 | 0.4139 | 0.3976 | 0.573 |
| 4501 | 0.1173 | 0.1175 | 0.1129 | 0.507 |
| 4502 | 0.0368 | 0.0369 | 0.0355 | 0.516 |
| 4504 | 0.0720 | 0.0730 | 0.0707 | 0.612 |
| 4601 | 0.5596 | 0.5613 | 0.5396 | 0.519 |
| 4802 | 0.2475 | 0.2479 | 0.2381 | 0.539 |
| 4803 | 0.2191 | 0.2209 | 0.2133 | 0.581 |
| 4804 | 0.4305 | 0.4323 | 0.4163 | 0.564 |
| 4805 | 0.2700 | 0.2714 | 0.2614 | 0.561 |
| 4806 | 0.0708 | 0.0710 | 0.0683 | 0.516 |
| 4808 | 0.4109 | 0.4112 | 0.3946 | 0.502 |
| 4809 | 0.2360 | 0.2376 | 0.2295 | 0.636 |
| 4810 | 0.1413 | 0.1422 | 0.1372 | 0.595 |
| 4811 | 0.2256 | 0.2268 | 0.2186 | 0.562 |
| 4812 | 0.3582 | 0.3577 | 0.3430 | 0.536 |
| 4813 | 0.2299 | 0.2301 | 0.2209 | 0.517 |
| 4901 | 0.0379 | 0.0380 | 0.0366 | 0.577 |
| 4902 | 0.0416 | 0.0416 | 0.0400 | 0.584 |
| 4903 | 0.0379 | 0.0380 | 0.0366 | 0.577 |
| 4904 | 0.0177 | 0.0178 | 0.0172 | 0.584 |
| 4905 | 0.2464 | 0.2487 | 0.2404 | 0.614 |
| 4906 | 0.0573 | 0.0575 | 0.0554 | 0.589 |
| 4907 | 0.0569 | 0.0569 | 0.0547 | 0.537 |
| 4908 | 0.0968 | 0.0989 | 0.0963 | 0.592 |
| 4909 | 0.0968 | 0.0989 | 0.0963 | 0.592 |
| 4910 | 0.3529 | 0.3541 | 0.3406 | 0.523 |
| 5001 | 4.0636 | 4.0115 | 3.8083 | 0.359 |
| 5002 | 0.4404 | 0.4400 | 0.4223 | 0.563 |
| 5003 | 1.3491 | 1.3305 | 1.2625 | 0.368 |
| 5004 | 2.5675 | 2.5528 | 2.4379 | 0.447 |
| 5101 | 0.6224 | 0.6238 | 0.6003 | 0.604 |
| 5103 | 0.6738 | 0.6749 | 0.6486 | 0.555 |
| 5106 | 0.4825 | 0.4847 | 0.4665 | 0.514 |
| 5108 | 0.6013 | 0.5994 | 0.5741 | 0.530 |
| 5109 | 0.4898 | 0.4881 | 0.4673 | 0.511 |
| 5201 | 0.2946 | 0.2943 | 0.2821 | 0.507 |
| 5204 | 0.8036 | 0.8006 | 0.7664 | 0.504 |
| 5206 | 0.3570 | 0.3560 | 0.3407 | 0.470 |
| 5207 | 0.1200 | 0.1212 | 0.1173 | 0.630 |
| 5208 | 0.7664 | 0.7654 | 0.7338 | 0.515 |
| 5209 | 0.5755 | 0.5769 | 0.5547 | 0.549 |
| 5301 | 0.0212 | 0.0213 | 0.0205 | 0.575 |
| 5305 | 0.0363 | 0.0365 | 0.0352 | 0.558 |
| 5306 | 0.0342 | 0.0343 | 0.0331 | 0.541 |
| 5307 | 0.3051 | 0.3049 | 0.2926 | 0.546 |
| 6103 | 0.0504 | 0.0511 | 0.0495 | 0.616 |
| 6104 | 0.2130 | 0.2137 | 0.2056 | 0.550 |
| 6105 | 0.1605 | 0.1612 | 0.1552 | 0.566 |
| 6107 | 0.1231 | 0.1241 | 0.1198 | 0.567 |
| 6108 | 0.4409 | 0.4431 | 0.4270 | 0.580 |
| 6109 | 0.0418 | 0.0420 | 0.0405 | 0.569 |
| 6110 | 0.3963 | 0.3968 | 0.3812 | 0.549 |
| 6201 | 0.1656 | 0.1662 | 0.1599 | 0.552 |
| 6202 | 0.4611 | 0.4606 | 0.4413 | 0.478 |
| 6203 | 0.0715 | 0.0721 | 0.0697 | 0.617 |
| 6204 | 0.1523 | 0.1537 | 0.1485 | 0.589 |
| 6205 | 0.1523 | 0.1537 | 0.1485 | 0.589 |
| 6206 | 0.1523 | 0.1537 | 0.1485 | 0.589 |
| 6207 | 0.9191 | 0.9293 | 0.8991 | 0.592 |
| 6208 | 0.2368 | 0.2391 | 0.2312 | 0.610 |
| 6209 | 0.1963 | 0.1980 | 0.1914 | 0.614 |
| 6301 | 0.0922 | 0.0921 | 0.0883 | 0.480 |
| 6302 | 0.1371 | 0.1375 | 0.1320 | 0.473 |
| 6303 | 0.0559 | 0.0561 | 0.0540 | 0.517 |
| 6304 | 0.1383 | 0.1400 | 0.1357 | 0.617 |

| | | | | |
|---|---|---|---|---|
| 6305 | 0.0572 | 0.0576 | 0.0556 | 0.559 |
| 6306 | 0.2110 | 0.2120 | 0.2044 | 0.587 |
| 6308 | 0.0403 | 0.0403 | 0.0388 | 0.566 |
| 6309 | 0.1203 | 0.1211 | 0.1168 | 0.572 |
| 6402 | 0.2300 | 0.2307 | 0.2220 | 0.580 |
| 6403 | 0.1720 | 0.1735 | 0.1677 | 0.596 |
| 6404 | 0.1307 | 0.1321 | 0.1278 | 0.609 |
| 6405 | 0.4542 | 0.4552 | 0.4375 | 0.541 |
| 6406 | 0.0671 | 0.0677 | 0.0654 | 0.596 |
| 6407 | 0.1705 | 0.1715 | 0.1653 | 0.574 |
| 6408 | 0.2955 | 0.2965 | 0.2853 | 0.552 |
| 6409 | 0.3963 | 0.3960 | 0.3799 | 0.525 |
| 6410 | 0.1355 | 0.1362 | 0.1311 | 0.542 |
| 6501 | 0.0758 | 0.0761 | 0.0734 | 0.629 |
| 6502 | 0.0212 | 0.0213 | 0.0206 | 0.561 |
| 6503 | 0.0599 | 0.0595 | 0.0568 | 0.428 |
| 6504 | 0.3504 | 0.3539 | 0.3421 | 0.582 |
| 6505 | 0.0893 | 0.0900 | 0.0869 | 0.554 |
| 6506 | 0.0601 | 0.0606 | 0.0585 | 0.547 |
| 6508 | 0.3038 | 0.3047 | 0.2931 | 0.541 |
| 6509 | 0.1794 | 0.1810 | 0.1750 | 0.620 |
| 6601 | 0.1749 | 0.1761 | 0.1699 | 0.585 |
| 6602 | 0.3765 | 0.3779 | 0.3636 | 0.546 |
| 6603 | 0.2407 | 0.2418 | 0.2329 | 0.578 |
| 6604 | 0.0525 | 0.0526 | 0.0505 | 0.505 |
| 6605 | 0.3519 | 0.3557 | 0.3445 | 0.672 |
| 6607 | 0.1200 | 0.1212 | 0.1173 | 0.630 |
| 6608 | 0.2411 | 0.2395 | 0.2287 | 0.484 |
| 6704 | 0.1231 | 0.1237 | 0.1191 | 0.557 |
| 6705 | 0.7563 | 0.7625 | 0.7369 | 0.637 |
| 6706 | 0.3414 | 0.3437 | 0.3314 | 0.551 |
| 6707 | 1.5401 | 1.5532 | 1.5012 | 0.626 |
| 6708 | 3.9835 | 4.0269 | 3.8881 | 0.487 |
| 6709 | 0.1634 | 0.1655 | 0.1604 | 0.638 |
| 6801 | 0.2198 | 0.2198 | 0.2111 | 0.552 |
| 6802 | 0.2844 | 0.2872 | 0.2778 | 0.625 |
| 6803 | 1.0505 | 1.0250 | 0.9652 | 0.270 |
| 6804 | 0.1680 | 0.1688 | 0.1627 | 0.605 |
| 6809 | 3.4683 | 3.5494 | 3.4648 | 0.654 |
| 6901 | 0.0222 | 0.0233 | 0.0231 | 0.637 |
| 6902 | 0.5913 | 0.5849 | 0.5563 | 0.403 |
| 6903 | 3.9587 | 3.9248 | 3.7355 | 0.318 |
| 6904 | 0.1960 | 0.1962 | 0.1886 | 0.583 |
| 6905 | 0.2171 | 0.2179 | 0.2097 | 0.546 |
| 6906 | 0.1014 | 0.1065 | 0.1056 | 0.657 |
| 6907 | 0.9539 | 0.9511 | 0.9103 | 0.480 |
| 6908 | 0.3258 | 0.3267 | 0.3144 | 0.585 |
| 6909 | 0.0667 | 0.0672 | 0.0649 | 0.605 |
| 7101 | 0.0268 | 0.0269 | 0.0258 | 0.499 |
| 7102 | 3.1897 | 3.2564 | 3.1690 | 0.587 |
| 7103 | 0.2380 | 0.2374 | 0.2273 | 0.477 |
| 7104 | 0.0211 | 0.0213 | 0.0205 | 0.524 |
| 7105 | 0.0281 | 0.0281 | 0.0271 | 0.533 |
| 7106 | 0.1604 | 0.1603 | 0.1538 | 0.498 |
| 7107 | 0.2093 | 0.2090 | 0.2004 | 0.517 |
| 7108 | 0.2014 | 0.2024 | 0.1951 | 0.570 |
| 7109 | 0.2445 | 0.2457 | 0.2367 | 0.550 |
| 7110 | 0.2993 | 0.2982 | 0.2854 | 0.485 |
| 7111 | 0.4471 | 0.4463 | 0.4279 | 0.541 |
| 7112 | 0.5573 | 0.5556 | 0.5318 | 0.479 |
| 7113 | 0.6225 | 0.6184 | 0.5906 | 0.474 |
| 7114 | 0.5824 | 0.5876 | 0.5679 | 0.599 |
| 7115 | 0.4990 | 0.4976 | 0.4765 | 0.494 |
| 7116 | 0.5339 | 0.5317 | 0.5084 | 0.466 |
| 7117 | 1.4168 | 1.4277 | 1.3760 | 0.513 |
| 7118 | 2.4934 | 2.4901 | 2.3875 | 0.502 |
| 7119 | 1.6095 | 1.6051 | 1.5373 | 0.501 |
| 7120 | 4.8986 | 4.8973 | 4.6931 | 0.441 |
| 7121 | 5.0920 | 5.0813 | 4.8642 | 0.452 |
| 7201 | 0.6419 | 0.6392 | 0.6120 | 0.532 |
| 7202 | 0.0390 | 0.0391 | 0.0376 | 0.540 |
| 7203 | 0.1138 | 0.1154 | 0.1117 | 0.556 |
| 7204 | 0.0000 | 0.0000 | 0.0000 | 0.637 |
| 7301 | 0.5309 | 0.5301 | 0.5079 | 0.491 |
| 7302 | 0.5659 | 0.5684 | 0.5469 | 0.535 |
| 7307 | 0.6819 | 0.6836 | 0.6575 | 0.559 |
| 7308 | 0.1869 | 0.1888 | 0.1824 | 0.558 |
| 7309 | 0.1634 | 0.1655 | 0.1604 | 0.638 |

[Statutory Authority: RCW 51.04.020. 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 |
|---|---|
| 2,084 & Under | 0.90 |
| 2,085 - 2,230 | 0.89 |
| 2,231 - 2,388 | 0.88 |
| 2,389 - 2,558 | 0.87 |
| 2,559 - 2,744 | 0.86 |
| 2,745 - 2,945 | 0.85 |
| 2,946 - 3,163 | 0.84 |
| 3,164 - 3,400 | 0.83 |
| 3,401 - 3,659 | 0.82 |
| 3,660 - 3,941 | 0.81 |
| 3,942 - 4,248 | 0.80 |
| 4,249 - 4,584 | 0.79 |
| 4,585 - 4,951 | 0.78 |
| 4,952 - 5,353 | 0.77 |
| 5,354 - 5,794 | 0.76 |
| 5,795 - 6,277 | 0.75 |
| 6,278 - 6,808 | 0.74 |
| 6,809 - 7,392 | 0.73 |
| 7,393 - 8,036 | 0.72 |
| 8,037 - 8,746 | 0.71 |

| | | |
|---|---|---|
| 8,747 | - 9,530 | 0.70 |
| 9,531 | - 10,397 | 0.69 |
| 10,398 | - 11,358 | 0.68 |
| 11,359 | - 12,424 | 0.67 |
| 12,425 | - 13,608 | 0.66 |
| 13,609 | - 14,926 | 0.65 |
| 14,927 | - 16,396 | 0.64 |
| 16,397 | - 18,037 | 0.63 |
| 18,038 | - 19,873 | 0.62 |
| 19,874 | - 21,930 | 0.61 |
| 21,931 & Over | | 0.60 |

[Statutory Authority: RCW 51.04.020. 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.

Base Rates Effective January 1, 1994

| Class | Accident Fund | Medical Aid Fund |
|---|---|---|
| 0101 | 1.3982 | 0.7894 |
| 0102 | 1.2970 | 0.7702 |
| 0103 | 1.4836 | 1.0467 |
| 0104 | 2.0611 | 1.0538 |
| 0105 | 1.2586 | 0.8944 |
| 0106 | 4.0487 | 3.6391 |
| 0107 | 1.2935 | 0.7310 |
| 0108 | 1.2520 | 0.6469 |
| 0109 | 4.7286 | 2.3896 |
| 0201 | 2.5381 | 1.3046 |
| 0202 | 2.8343 | 1.8592 |
| 0206 | 2.7195 | 1.1299 |
| 0301 | 0.5589 | 0.4541 |
| 0302 | 2.1415 | 1.0803 |
| 0306 | 1.0650 | 0.6421 |
| 0307 | 0.7808 | 0.5437 |
| 0403 | 1.3102 | 0.9729 |
| 0502 | 1.1912 | 0.6685 |
| 0504 | 1.4982 | 0.8277 |
| 0506 | 4.3824 | 2.3677 |
| 0507 | 3.1345 | 1.8771 |
| 0508 | 3.4097 | 1.6003 |
| 0509 | 2.0208 | 1.1829 |
| 0510 | 1.4609 | 0.9626 |
| 0511 | 1.1947 | 0.7891 |
| 0512 | 1.8712 | 1.0760 |
| 0513 | 0.7526 | 0.5053 |
| 0514 | 1.4609 | 0.9626 |
| 0515 | 2.6498 | 1.2995 |
| 0516 | 1.4609 | 0.9626 |
| 0517 | 1.8332 | 1.3207 |
| 0518 | 1.8819 | 0.9755 |
| 0519 | 1.4911 | 1.1874 |
| 0601 | 0.6279 | 0.4454 |
| 0602 | 0.4096 | 0.2795 |
| 0603 | 0.8048 | 0.5104 |
| 0604 | 1.0263 | 0.8291 |
| 0606 | 0.2162 | 0.2398 |
| 0607 | 0.2359 | 0.2460 |
| 0608 | 0.2431 | 0.2260 |
| 0701 | 2.7346 | 1.0169 |
| 0803 | 0.3342 | 0.2684 |
| 0804 | 0.9284 | 0.5816 |
| 0901 | 1.7463 | 1.0350 |
| 1002 | 0.9260 | 0.6628 |
| 1003 | 0.5997 | 0.4131 |
| 1004 | 0.5997 | 0.4131 |
| 1005 | 4.7327 | 2.3634 |
| 1007 | 0.2420 | 0.2329 |
| 1101 | 0.5192 | 0.4306 |
| 1102 | 1.2691 | 0.7464 |
| 1103 | 0.4065 | 0.3885 |
| 1104 | 0.4994 | 0.4737 |
| 1106 | 0.1773 | 0.2408 |
| 1108 | 0.3684 | 0.3710 |
| 1109 | 0.6350 | 0.6252 |
| 1301 | 0.2959 | 0.2502 |
| 1303 | 0.1909 | 0.1444 |
| 1304 | 0.0193 | 0.0214 |
| 1305 | 0.2835 | 0.2877 |
| 1401 | 0.6026 | 0.5351 |
| 1404 | 0.5032 | 0.3921 |
| 1405 | 0.4871 | 0.4366 |
| 1501 | 0.3705 | 0.2815 |
| 1507 | 0.2820 | 0.2514 |
| 1701 | 1.8241 | 0.9221 |
| 1702 | 1.8241 | 0.9221 |
| 1703 | 0.4268 | 0.2864 |
| 1704 | 0.8537 | 0.5869 |
| 1801 | 1.0190 | 0.5852 |
| 1802 | 0.8894 | 0.6168 |
| 2002 | 0.5185 | 0.5252 |
| 2003 | 0.3711 | 0.3615 |
| 2004 | 0.6474 | 0.5591 |
| 2007 | 0.3572 | 0.4009 |
| 2008 | 0.2458 | 0.2010 |
| 2009 | 0.2448 | 0.2477 |
| 2101 | 0.6013 | 0.5183 |
| 2102 | 0.3711 | 0.3615 |
| 2104 | 0.2486 | 0.2738 |
| 2105 | 0.5205 | 0.3805 |
| 2106 | 0.3500 | 0.3199 |
| 2201 | 0.2152 | 0.1983 |
| 2202 | 0.4905 | 0.4913 |

| | | | | | |
|---|---|---|---|---|---|
| 2203 | 0.2639 | 0.2578 | 4305 | 1.0830 | 0.6850 |
| 2401 | 0.3775 | 0.3699 | 4401 | 0.4860 | 0.4356 |
| 2903 | 0.5468 | 0.5350 | 4402 | 0.5579 | 0.5396 |
| 2904 | 0.5946 | 0.5305 | 4404 | 0.4509 | 0.3768 |
| 2905 | 0.4393 | 0.4410 | 4501 | 0.1190 | 0.1144 |
| 2906 | 0.3713 | 0.2828 | 4502 | 0.0368 | 0.0366 |
| 2907 | 0.4675 | 0.4074 | 4504 | 0.0588 | 0.0879 |
| 2908 | 0.9338 | 0.7930 | 4601 | 0.5543 | 0.5645 |
| 2909 | 0.5063 | 0.4774 | 4802 | 0.2574 | 0.2369 |
| 3101 | 0.7319 | 0.4725 | 4803 | 0.1984 | 0.2453 |
| 3102 | 0.2875 | 0.2724 | 4804 | 0.4246 | 0.4408 |
| 3103 | 0.6204 | 0.4526 | 4805 | 0.2603 | 0.2828 |
| 3104 | 0.4673 | 0.3740 | 4806 | 0.0697 | 0.0716 |
| 3105 | 0.9304 | 0.7006 | 4808 | 0.4269 | 0.3909 |
| 3303 | 0.2055 | 0.1995 | 4809 | 0.2256 | 0.2534 |
| 3304 | 0.5522 | 0.5380 | 4810 | 0.1345 | 0.1508 |
| 3309 | 0.3081 | 0.3754 | 4811 | 0.2172 | 0.2364 |
| 3401 | 0.3635 | 0.3125 | 4812 | 0.3941 | 0.3191 |
| 3402 | 0.3906 | 0.3437 | 4813 | 0.2388 | 0.2194 |
| 3403 | 0.1776 | 0.1573 | 4901 | 0.0389 | 0.0371 |
| 3404 | 0.3792 | 0.3827 | 4902 | 0.0444 | 0.0389 |
| 3405 | 0.2846 | 0.2502 | 4903 | 0.0389 | 0.0371 |
| 3406 | 0.1715 | 0.2002 | 4904 | 0.0163 | 0.0195 |
| 3407 | 0.3043 | 0.2485 | 4905 | 0.2219 | 0.2784 |
| 3408 | 0.0792 | 0.0697 | 4906 | 0.0572 | 0.0581 |
| 3409 | 0.0822 | 0.0884 | 4907 | 0.0598 | 0.0537 |
| 3410 | 0.1518 | 0.1994 | 4908 | 0.0592 | 0.1396 |
| 3501 | 0.8988 | 0.6594 | 4909 | 0.0592 | 0.1396 |
| 3503 | 0.2022 | 0.2912 | 4910 | 0.3483 | 0.3581 |
| 3506 | 0.8275 | 0.5198 | 5001 | 5.2245 | 2.6082 |
| 3509 | 0.3848 | 0.3796 | 5002 | 0.4840 | 0.3953 |
| 3510 | 0.3975 | 0.4035 | 5003 | 1.7720 | 0.8264 |
| 3511 | 0.6130 | 0.5538 | 5004 | 2.9733 | 2.0671 |
| 3512 | 0.3084 | 0.3619 | 5101 | 0.6491 | 0.6043 |
| 3602 | 0.0855 | 0.1060 | 5103 | 0.7026 | 0.6455 |
| 3603 | 0.2981 | 0.3371 | 5106 | 0.4621 | 0.5026 |
| 3604 | 1.3498 | 1.0083 | 5108 | 0.6829 | 0.5104 |
| 3605 | 0.4223 | 0.3581 | 5109 | 0.5572 | 0.4119 |
| 3701 | 0.2401 | 0.2212 | 5201 | 0.3200 | 0.2642 |
| 3702 | 0.5096 | 0.4317 | 5204 | 0.9147 | 0.6744 |
| 3707 | 0.3959 | 0.3914 | 5206 | 0.3954 | 0.3090 |
| 3708 | 0.2875 | 0.2724 | 5207 | 0.1056 | 0.1386 |
| 3801 | 0.2189 | 0.1925 | 5208 | 0.8348 | 0.6872 |
| 3802 | 0.1760 | 0.1731 | 5209 | 0.5870 | 0.5653 |
| 3808 | 0.2597 | 0.2347 | 5301 | 0.0206 | 0.0219 |
| 3901 | 0.1438 | 0.1645 | 5305 | 0.0352 | 0.0376 |
| 3902 | 0.4003 | 0.4127 | 5306 | 0.0333 | 0.0352 |
| 3903 | 0.9394 | 1.0456 | 5307 | 0.3337 | 0.2746 |
| 3905 | 0.1218 | 0.1696 | 6103 | 0.0420 | 0.0607 |
| 3906 | 0.4504 | 0.4279 | 6104 | 0.2137 | 0.2130 |
| 3909 | 0.2054 | 0.2310 | 6105 | 0.1578 | 0.1650 |
| 4002 | 0.6593 | 0.5067 | 6107 | 0.1113 | 0.1369 |
| 4101 | 0.1884 | 0.1863 | 6108 | 0.4310 | 0.4580 |
| 4103 | 0.1970 | 0.2284 | 6109 | 0.0398 | 0.0443 |
| 4107 | 0.1097 | 0.1171 | 6110 | 0.4146 | 0.3779 |
| 4108 | 0.1884 | 0.1863 | 6201 | 0.1664 | 0.1655 |
| 4109 | 0.1884 | 0.1863 | 6202 | 0.4936 | 0.4190 |
| 4201 | 0.2404 | 0.1854 | 6203 | 0.0658 | 0.0792 |
| 4301 | 0.7203 | 0.6542 | 6204 | 0.1368 | 0.1715 |
| 4302 | 0.6888 | 0.4666 | 6205 | 0.1368 | 0.1715 |
| 4304 | 0.5275 | 0.5179 | 6206 | 0.1368 | 0.1715 |

| | | |
|---|---|---|
| 6207 | 0.7777 | 1.0893 |
| 6208 | 0.2119 | 0.2685 |
| 6209 | 0.1782 | 0.2200 |
| 6301 | 0.0986 | 0.0842 |
| 6302 | 0.1354 | 0.1370 |
| 6303 | 0.0552 | 0.0566 |
| 6304 | 0.1152 | 0.1667 |
| 6305 | 0.0519 | 0.0634 |
| 6306 | 0.2063 | 0.2189 |
| 6308 | 0.0416 | 0.0391 |
| 6309 | 0.1123 | 0.1302 |
| 6402 | 0.2342 | 0.2283 |
| 6403 | 0.1540 | 0.1946 |
| 6404 | 0.1130 | 0.1525 |
| 6405 | 0.4644 | 0.4439 |
| 6406 | 0.0607 | 0.0752 |
| 6407 | 0.1633 | 0.1800 |
| 6408 | 0.2972 | 0.2945 |
| 6409 | 0.4320 | 0.3552 |
| 6410 | 0.1304 | 0.1416 |
| 6501 | 0.0756 | 0.0779 |
| 6502 | 0.0194 | 0.0233 |
| 6503 | 0.0698 | 0.0473 |
| 6504 | 0.3006 | 0.4105 |
| 6505 | 0.0799 | 0.1001 |
| 6506 | 0.0521 | 0.0692 |
| 6508 | 0.3026 | 0.3063 |
| 6509 | 0.1623 | 0.2022 |
| 6601 | 0.1629 | 0.1905 |
| 6602 | 0.3706 | 0.3846 |
| 6603 | 0.2389 | 0.2452 |
| 6604 | 0.0530 | 0.0516 |
| 6605 | 0.3150 | 0.4043 |
| 6607 | 0.1056 | 0.1386 |
| 6608 | 0.2881 | 0.1861 |
| 6614 | 272.0000** | 249.7000** |
| 6615 | 203.2000** | 186.5000** |
| 6616 | 27.0000** | 24.7000** |
| 6617 | 20.2000** | 18.5000** |
| 6618 | 77.5000** | 71.2000** |
| 6704 | 0.1201 | 0.1271 |
| 6705 | 0.7053 | 0.8321 |
| 6706 | 0.3154 | 0.3717 |
| 6707 | 11.32* | 13.70* |
| 6708 | 3.1900 | 4.8240 |
| 6709 | 0.1359 | 0.1980 |
| 6801 | 0.2376 | 0.2009 |
| 6802 | 0.2554 | 0.3222 |
| 6803 | 1.6138 | 0.3486 |
| 6804 | 0.1683 | 0.1704 |
| 6809 | 2.1394 | 5.0284 |
| 6901 | 0.0000 | 0.0474 |
| 6902 | 0.7423 | 0.4056 |
| 6903 | 4.7024 | 2.9071 |
| 6904 | 0.2091 | 0.1837 |
| 6905 | 0.2178 | 0.2166 |
| 6906 | 0.0000 | 0.2166 |
| 6907 | 1.0575 | 0.8286 |
| 6908 | 0.3367 | 0.3177 |
| 6909 | 0.0636 | 0.0712 |
| 7101 | 0.0271 | 0.0263 |
| 7102 | 16.00* | 36.42* |
| 7103 | 0.2627 | 0.2074 |
| 7104 | 0.0185 | 0.0239 |
| 7105 | 0.0284 | 0.0277 |
| 7106 | 0.1695 | 0.1489 |
| 7107 | 0.2282 | 0.1877 |
| 7108 | 0.1961 | 0.2089 |
| 7109 | 0.2358 | 0.2551 |
| 7110 | 0.3382 | 0.2529 |
| 7111 | 0.4954 | 0.3954 |
| 7112 | 0.6213 | 0.4795 |
| 7113 | 0.7438 | 0.4784 |
| 7114 | 0.5257 | 0.6543 |
| 7115 | 0.5571 | 0.4298 |
| 7116 | 0.6024 | 0.4505 |
| 7117 | 1.2373 | 1.6166 |
| 7118 | 2.7234 | 2.2154 |
| 7119 | 1.7968 | 1.3897 |
| 7120 | 5.0776 | 4.5910 |
| 7121 | 5.4988 | 4.5460 |
| 7201 | 0.7427 | 0.5316 |
| 7202 | 0.0381 | 0.0400 |
| 7203 | 0.0891 | 0.1417 |
| 7204 | 0.0000 | 0.0000 |
| 7301 | 0.5759 | 0.4760 |
| 7302 | 0.5482 | 0.5867 |
| 7307 | 0.6980 | 0.6684 |
| 7308 | 0.1611 | 0.2162 |
| 7309 | 0.1359 | 0.1980 |

* Daily rate. The daily rate shall be paid in full on any person for any calendar day in which any duties are performed that are incidental to the profession of the worker.

** These rates are calculated on a per license basis for parimutuel race tracks and are base rated.

[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 54.16.035. 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 296-17-89501 Average hourly wage effective July 1, 1993.** The following table represents the average hourly wage rate to be used when computing worker hours in accordance with WAC 296-17-350(6).

| Class | Average hourly wage |
|---|---|
| 4802 | 6.50 |
| 4803 | 6.50 |
| 4804 | 7.50 |
| 4805 | 7.50 |
| 4806 | 5.00 |
| 4808 | 7.50 |
| 4809 | 7.00 |
| 4810 | 6.00 |
| 4811 | 6.00 |
| 4812 | 12.00 |
| 4813 | 5.50 |
| 4910 | 8.50 |
| 7301 | 9.00 |
| 7302 | 7.50 |
| 7307 | 6.50 |
| 7309 | 6.00 |

[Statutory Authority: RCW 51.04.020(1) and 54.16.035. 93-12-093, § 296-17-89501, filed 5/31/93, effective 7/1/93.]

**WAC 296-17-896 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-17-911 Group dividends.** Group dividends will be calculated provided:

(1) Employers qualify as a group as defined by WAC 296-17-910.

(2) Group submits a satisfactorily completed:

(a) Application for group dividend plan no later than:

(i) April 30 for the coverage period beginning the following July 1;

(ii) July 31 for the coverage period beginning the following October 1;

(iii) October 31 for the coverage period beginning the following January 1;

(iv) January 31 for the coverage period beginning the following April 1.

(b) Employer's authorization for release of insurance data and group membership enrollment application for each employer account to be enrolled by the 15th day of the month preceding the start of any quarter within the coverage period;

(c) Group dividend agreement by the 15th day of the month preceding the start of the coverage period.

(3) A dividend is declared under provisions of WAC 296-17-905.

Employers associated with the group at any time during the term of the group dividend agreement will remain parties to the group dividend agreement for the balance of its term.

Members of the organization or association which do not elect to participate in the group dividend at the inception of the agreement may become participating members in the group any quarter during the term of the agreement.

Each employer included as a group member in the group dividend agreement will maintain an individual account with the department and will continue to pay quarterly premiums based on assigned risk classification(s) and individual experience rating.

The department may withhold any member's pro rata share from the group's dividend and credit the employer's industrial insurance account when premiums, penalties, or assessments are owing the department.

Dividends will be calculated in accordance with WAC 296-17-905 and are subject to WAC 296-17-907 and 296-17-915.

The payment of the group dividend will be made by the department to the association and shall be distributed to the individual group members by the association.

[Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-18-083, § 296-17-911, filed 8/31/93, effective 10/1/93. Statutory Authority: RCW 51.16.035. 86-06-018 (Order 86-18), § 296-17-911, filed 2/25/86; 85-06-025 (Order 85-8), § 296-17-911, filed 2/28/85, effective 7/1/85; 84-06-024 (Order 84-2), § 296-17-911, filed 2/29/84, effective 7/1/84; 83-05-018 (Order 83-4), § 296-17-911, filed 2/9/83, effective 7/1/83; 82-05-019 (Order 82-5), § 296-17-911, filed 2/10/82; 81-04-024 (Order 81-02), § 296-17-911, filed 1/30/81.]

**WAC 296-17-917 Qualifications for employer group participation in retrospective rating plan.** The department may enroll interested groups in the retrospective rating plan provided:

(1) Employers qualify as a group as defined by WAC 296-17-910.

(2) Employers have industrial insurance accounts in good standing with the department such that at the time the agreement is processed no outstanding premium, penalties, or assessments are due and quarterly reporting of payroll has been made in accordance with WAC 296-17-310.

(3) Group submits a satisfactorily completed:

(a) Application for group retrospective rating plan no later than:

(i) April 30 for the coverage period beginning the following July 1;

(ii) July 31 for the coverage period beginning the following October 1;

(iii) October 31 for the coverage period beginning the following January 1;

(iv) January 31 for the coverage period beginning the following April 1.

(b) Employer's authorization for release of insurance data and group membership enrollment application for each employer account to be enrolled by the 15th day of the month preceding the start of any quarter within the coverage period;

(c) Group retrospective rating plan agreement by the 15th day of the month preceding the start of the coverage period.

(4) The group may be required to post a surety bond or other security deposit separate from the individual employer's cash deposits required for establishing industrial insurance accounts with the department:

(a) The group's surety bond must be on the prescribed forms authorized by the department;

(b) The group's surety bond shall be secured in one thousand dollar increments provided further that if the group's estimated maximum premium due falls within two increment ranges, a surety bond at the higher level increment shall be obtained;

(c) The group's surety bond shall remain in force and effect for the period required retrospective premium calculations are made.

The amount of such surety bond or other security deposit, if required, may be fixed by the department in any amount equal to or less than the difference between the group's estimated standard premium and the maximum premium due under the retrospective rating plan. Past reporting data and current rate levels will be used to determine the estimated standard premium and maximum percentage retrospective premium due under the plan.

Each employer included as a group member in the group retrospective rating plan agreement will maintain an individual account with the department and will continue to pay quarterly premiums based on assigned risk classification(s) and individual experience rating.

Employers associated with the group at any time during the term of the group retrospective rating plan agreement will remain parties to the agreement for the balance of its term.

Members of the organization or association which do not elect to participate in the group retrospective rating plan at the inception of the agreement may become participating members in the group any quarter during the term of the agreement.

(5) The group maintains any existing retrospective rating account in good standing with the department with no outstanding additional premium assessment or interest therein due at the time the agreement is processed. The department may at its discretion, determine that a group is in good standing if the group and the department agree upon a payment schedule or other arrangements satisfactory to the department for payment of additional premium assessments or interest due. Said payment schedule or other established satisfactory arrangements shall be made prior to the time the agreement is processed.

Final determination of an employer's eligibility to participate in a group plan under this section rests with the department subject to review under chapter 51.52 RCW.

The payment of the group retrospective premium adjustment will be made to or collected from the association. The distribution to the individual group members or collection from the individual group members will be done by the association.

Group retrospective premium adjustment will be calculated according to WAC 296-17-914 and is subject to WAC 296-17-915 and 296-17-916.

[Statutory Authority: RCW 51.04.020(1) and 51.16.035. 93-18-083, § 296-17-917, filed 8/31/93, effective 10/1/93; 87-12-033 (Order 87-17), § 296-17-917, filed 5/29/87. Statutory Authority: RCW 51.16.035. 86-06-018 (Order 86-18), § 296-17-917, filed 2/25/86; 85-06-025 (Order 85-8), § 296-17-917, filed 2/28/85, effective 7/1/85; 84-06-024 (Order 84-2), § 296-17-917, filed 2/29/84, effective 7/1/84; 83-05-018 (Order 83-4), § 296-17-917, filed 2/9/83, effective 7/1/83; 82-05-019 (Order 82-5), § 296-17-917, filed 2/10/82; 81-04-024 (Order 81-02), § 296-17-917, filed 1/30/81.]

**WAC 296-17-919 Table I.**

RETROSPECTIVE RATING PLANS A, A1, A2, A3, AND B
STANDARD PREMIUM SIZE RANGES
Effective January 1, 1994

| Size Group Number | Standard Premium Range | | |
|---|---|---|---|
| 84 | $ 4,294 | - | $ 4,953 |
| 83 | 4,954 | - | 5,687 |
| 82 | 5,688 | - | 6,499 |
| 81 | 6,500 | - | 7,401 |
| 80 | 7,402 | - | 8,397 |
| 79 | 8,398 | - | 9,495 |
| 78 | 9,496 | - | 10,701 |
| 77 | 10,702 | - | 12,029 |
| 76 | 12,030 | - | 13,486 |
| 75 | 13,487 | - | 15,081 |
| 74 | 15,082 | - | 16,825 |
| 73 | 16,826 | - | 18,729 |
| 72 | 18,730 | - | 20,806 |
| 71 | 20,807 | - | 23,068 |
| 70 | 23,069 | - | 25,528 |
| 69 | 25,529 | - | 28,203 |
| 68 | 28,204 | - | 28,979 |
| 67 | 28,980 | - | 30,608 |
| 66 | 30,609 | - | 32,354 |
| 65 | 32,355 | - | 34,230 |
| 64 | 34,231 | - | 36,248 |
| 63 | 36,249 | - | 38,416 |
| 62 | 38,417 | - | 40,756 |
| 61 | 40,757 | - | 43,278 |
| 60 | 43,279 | - | 46,003 |
| 59 | 46,004 | - | 48,950 |
| 58 | 48,951 | - | 52,141 |
| 57 | 52,142 | - | 55,602 |
| 56 | 55,603 | - | 59,361 |
| 55 | 59,362 | - | 63,450 |
| 54 | 63,451 | - | 67,904 |
| 53 | 67,905 | - | 72,763 |
| 52 | 72,764 | - | 78,074 |
| 51 | 78,075 | - | 83,888 |
| 50 | 83,889 | - | 90,265 |
| 49 | 90,266 | - | 97,272 |
| 48 | 97,273 | - | 104,987 |
| 47 | 104,988 | - | 113,498 |
| 46 | 113,499 | - | 122,906 |
| 45 | 122,907 | - | 133,331 |
| 44 | 133,332 | - | 140,865 |
| 43 | 140,866 | - | 150,130 |
| 42 | 150,131 | - | 160,248 |
| 41 | 160,249 | - | 171,321 |
| 40 | 171,322 | - | 183,463 |
| 39 | 183,464 | - | 196,811 |
| 38 | 196,812 | - | 211,521 |
| 37 | 211,522 | - | 227,775 |
| 36 | 227,776 | - | 245,783 |
| 35 | 245,784 | - | 265,789 |
| 34 | 265,790 | - | 288,090 |

| | | | |
|---|---|---|---|
| 33 | 288,091 | - | 313,023 |
| 32 | 313,024 | - | 340,997 |
| 31 | 340,998 | - | 372,499 |
| 30 | 372,500 | - | 408,112 |
| 29 | 408,113 | - | 448,540 |
| 28 | 448,541 | - | 494,639 |
| 27 | 494,640 | - | 547,456 |
| 26 | 547,457 | - | 608,285 |
| 25 | 608,286 | - | 678,724 |
| 24 | 678,725 | - | 760,788 |
| 23 | 760,789 | - | 857,018 |
| 22 | 857,019 | - | 970,663 |
| 21 | 970,664 | - | 1,105,918 |
| 20 | 1,105,919 | - | 1,268,268 |
| 19 | 1,268,269 | - | 1,464,979 |
| 18 | 1,464,980 | - | 1,705,818 |
| 17 | 1,705,819 | - | 2,004,122 |
| 16 | 2,004,123 | - | 2,230,523 |
| 15 | 2,230,524 | - | 2,488,836 |
| 14 | 2,488,837 | - | 2,777,523 |
| 13 | 2,777,524 | - | 3,239,485 |
| 12 | 3,239,486 | - | 3,809,183 |
| 11 | 3,809,184 | - | 4,997,497 |
| 10 | 4,997,498 | - | 6,820,405 |
| 9 | 6,820,406 | - | 8,882,450 |
| 8 | 8,882,451 | - | 11,999,813 |
| 7 | 11,999,814 | - | 16,908,436 |
| 6 | 16,908,437 | - | 25,334,040 |
| 5 | 25,334,041 | | & Over |

[Statutory Authority: RCW 51.04.020. 93-24-114, § 296-17-919, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(1) and 51.16.035. 92-24-063, § 296-17-919, filed 11/30/92, effective 1/1/93; 91-24-053, § 296-17-919, filed 11/27/91, effective 1/1/92; 90-24-042, § 296-17-919, filed 11/30/90, effective 1/1/91; 89-24-051 (Order 89-22), § 296-17-919, filed 12/1/89, effective 1/1/90; 88-24-010 (Order 88-26), § 296-17-919, filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.16.035. 86-06-018 (Order 86-18), § 296-17-919, filed 2/25/86; 85-06-025 (Order 85-8), § 296-17-919, filed 2/28/85, effective 7/1/85; 84-06-024 (Order 84-2), § 296-17-919, filed 2/29/84, effective 7/1/84; 83-05-018 (Order 83-4), § 296-17-919, filed 2/9/83, effective 7/1/83; 82-05-019 (Order 82-5), § 296-17-919, filed 2/10/82; 81-24-042 (Order 81-30), § 296-17-919, filed 11/30/81, effective 1/1/82; 81-04-024 (Order 81-02), § 296-17-919, filed 1/30/81.]

**WAC 296-17-920 Assessment for supplemental pension fund.** The amount of 23.6 mills ($.0236) shall be retained by each employer from the earnings of each worker for each hour or fraction thereof the worker is employed. Provided that in classifications 6707 and 7102, the employer shall retain nineteen cents per day from each worker. 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. 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



## DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-20-115 Flat fees. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-115, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-115, filed 6/1/71; Order 70-12, § 296-20-115, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-115, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-20-12502 Physician assistant modifiers. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-12502, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-12502, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-12502, filed 11/30/79, effective 1/1/80.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

**WAC 296-20-010 General information.** (1) The following rules are promulgated pursuant to RCW 51.04.020 and 51.04.030. The department or self-insurer may purchase

necessary physician and other provider services according to the fee schedules. The fee schedules shall be established in consultation with interested persons and updated at times determined by the department in consultation with those interested persons. 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 fee schedules, interested persons must contact the department at the following address:

Department of Labor and Industries
Health Services Analysis
Interested Person's Mailing List for the Fee Schedules
P.O. Box 44322
Olympia, WA 98504-4322

(2) The fee schedules are intended to cover all services for accepted industrial insurance claims. All fees listed are the maximum fees allowable. Practitioners shall bill their usual and customary fee for services. **If a usual and customary fee for any particular service is lower to the general public than listed in the fee schedules, the practitioner shall bill the department or self-insurer at the lower rate**. The department or self-insurer will pay the lesser of the billed charge or the fee schedules' maximum allowable.

(3) The rules contained in the introductory section pertain to *all* practitioners regardless of specialty area or limitation of practice. Additional rules pertaining to specialty areas will be found in the appropriate section of the medical aid rules.

(4) The methodology for determining the maximum allowable fee for a procedure is listed in WAC 296-20-132 and 296-20-135.

(5) No fee is payable for missed appointments unless the appointment is for an examination arranged by the department or self-insurer.

(6) When a claim has been accepted by the department or self-insurer, no provider or his/her representative may bill the worker for the difference between the allowable fee and the usual and customary charge. Nor can the worker be charged a fee, either for interest or completion of forms, related to services rendered for the industrial injury or condition. Refer to chapter 51.04 RCW.

(7) Practitioners must maintain documentation in claimant medical or health care service records adequate to verify the level, type, and extent of services provided to claimants. A health care practitioner's bill for services, appointment book, accounting records, or other similar methodology do not qualify as appropriate documentation for services rendered. Refer to chapter 296-20 WAC and department policy for reporting requirements.

(8) Except as provided in WAC 296-20-055 (temporary treatment of unrelated conditions when retarding recovery), practitioners shall bill, and the department or self-insurer shall pay, only for proper and necessary medical care required for the diagnosis and curative or rehabilitative treatment of the accepted condition.

(9) When a worker is being treated concurrently for an unrelated condition the fee allowable for the service(s) rendered must be shared proportionally between the payors.

(10) Correspondence: Correspondence pertaining to state fund and department of energy claims should be sent to: Department of Labor and Industries, Claims Administration, P.O. Box 44291, Olympia, Washington 98504-4291.

Accident reports should be sent to: Department of Labor and Industries, P.O. Box 44299, Olympia, Washington 98504-4299.

Send provider bills by type (UB-92) to: Department of Labor and Industries, P.O. Box 44266, Olympia, Washington 98504-4266.

Adjustments, Home Nursing and Miscellaneous to: Department of Labor and Industries, P.O. Box 44267, Olympia, Washington 99504-44267

Pharmacy to: Department of Labor and Industries, P.O. Box 44268, Olympia, Washington 99504-4268.

HFCA to: Department of Labor and Industries, P.O. Box 44269, Olympia, Washington 98504-4269.

State fund claims have six digit numbers preceded by a letter other than "S," "T," or "V."

Department of energy claims have seven digit numbers with no letter prefix.

All correspondence and billings pertaining to *crime victims* claims should be sent to Crime Victims Division, Department of Labor and Industries, P.O. Box 44520, Olympia, Washington 98504-4520.

Crime victim claims have six digit numbers preceded by a "V."

All correspondence and billings pertaining to self-insured claims should be sent directly to the employer or the service representative as the case may be.

Self-insured claims are six digit numbers preceded by a "S," or "T."

Communications to the department or self-insurer must show the patient's full name and claim number. If the claim number is unavailable, providers should contact the department or self-insurer for the number, indicating the patient's name, Social Security number, the date and the nature of the injury, and the employer's name. A communication should refer to one claim only. Correspondence must be legible and reproducible, as department records are microfilmed. Correspondence regarding specific claim matters should be sent directly to the department in Olympia or self-insurer in order to avoid rehandling by the service location.

(11) The department's various local service locations should be utilized by providers to obtain information, supplies, or assistance in dealing with matters pertaining to industrial injuries.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-010, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-20-010, filed 12/1/92, effective 1/1/93; 90-04-057, § 296-20-010, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-010, filed 11/30/87, effective 1/1/88; 86-20-074 (Order 86-36), § 296-20-010, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-010, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-010, 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), § 296-20-010, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-010, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-010, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-010, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-010, filed 1/30/74; Order 70-12, §

296-20-010, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-010, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-01002 Definitions. 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.

**Unusual or unlisted procedure**: Value of unlisted services or procedures should be substantiated "by report" (BR).

"**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.

"**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.

**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.

**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.

**Consultation examination report:** The following information must be included in this type of report. Additional 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 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.

**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.

**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.

**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.

**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.

**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.

**Temporary partial disability**: Partial time loss compensation may be paid when the worker can return to work on a limited basis or return to 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.**

**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.**

**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.

**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.

**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.

**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.

**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.

**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.

**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).

**Authorization**: Notification by a qualified representative of the department or self-insurer that specific medically 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.

**Medically necessary**: Those health services are medically necessary which, in the opinion of the director or his or her designee, are:

(a) Proper and necessary for the diagnosis and curative or rehabilitative treatment of an accepted condition; and

(b) Reflective of accepted standards of good practice within the scope of the provider's license or certification; and

(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.

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 medically necessary. Services which are controversial, obsolete, experimental, or investigational are presumed not to be medically necessary, and shall be authorized only as provided in WAC 296-20-03002(6).

**Utilization review**: The assessment of a claimant's medical care to assure that it is medically 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.

**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.

**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.

**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.

**Home nursing**: Those nursing services that are medically 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.

[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 296-20-015 Who may treat.** (1) In order to treat workers under the Industrial Insurance Act, a health care provider must qualify as an approved provider under the department's rules. The department must approve the health care provider through the issuance of a provider number before the health care provider is eligible for payment for services.

(2) Para-professionals, who are not independently licensed, must practice under the direct supervision of a licensed health care professional whose scope of practice and specialty training includes the service provided by the para-professional. The department may deny direct reimbursement to the para-professional for services rendered, and may instead directly reimburse the licensed and supervising health

care professional for covered services. Payment rules for para-professionals may be determined by department policy.

(3) Procedures and evaluations requiring specialized skills and knowledge will be limited to board certified or board qualified physicians, or osteopathic physicians as specified by the American Medical Association or the American Osteopathic Association.

(4) The department as a trustee of the medical aid fund has a duty to supervise provision of proper and necessary medical care that is delivered promptly, efficiently, and economically. The department can deny, revoke, suspend, limit, or impose conditions on a health care provider's authorization to treat workers under the Industrial Insurance Act. Reasons for denying issuance of a provider number or imposing any of the above restrictions include, but are not limited to the following:

(a) Incompetence or negligence, which results in injury to a worker or which creates an unreasonable risk that a worker may be harmed.

(b) The possession, use, prescription for use, or distribution of controlled substances, legend drugs, or addictive, habituating, or dependency-inducing substances in any way other than for therapeutic purposes.

(c) Any temporary or permanent probation, suspension, revocation, or type of limitation of a practitioner's license to practice by any court, board, or administrative agency.

(d) The commission of any act involving moral turpitude, dishonesty, or corruption relating to the practice of the provider's profession. The act need not constitute a crime. If a conviction or finding of such an act is reached by a court or other tribunal pursuant to plea, hearing, or trial, a certified copy of the conviction or finding is conclusive evidence of the violation.

(e) The failure to comply with the department's orders, rules, or policies.

(f) The failure, neglect, or refusal to:

(i) Provide records requested by the department pursuant to a health care services review or an audit.

(ii) Submit complete, adequate, and detailed reports or additional reports requested or required by the department regarding the treatment and condition of a worker.

(g) The submission or collusion in the submission of false or misleading reports or bills to any government agency.

(h) Billing a worker for:

(i) Treatment of an industrial condition for which the department has accepted responsibility; or

(ii) The difference between the amount paid by the department under the maximum allowable fee set forth in these rules and any other charge.

(i) Repeated failure to notify the department immediately and prior to burial in any death, where the cause of the death is not definitely known and possibly related to an industrial injury or occupational disease.

(j) Repeated failure to recognize emotional and social factors impeding recovery of a worker who is being treated under the Industrial Insurance Act.

(k) Repeated unreasonable refusal to comply with the recommendations of board certified or qualified specialists who have examined a worker.

(l) Repeated use of:

(i) Treatment of controversial or experimental nature;

(ii) Contraindicated or hazardous treatment; or

(iii) Treatment past stabilization of the industrial condition or after maximum curative improvement has been obtained.

(m) Declaration of mental incompetency by a court or other tribunal.

(n) Failure to comply with the applicable code of professional conduct or ethics.

(o) Failure to inform the department of any disciplinary action issued by order or formal letter taken against the provider's license to practice.

(p) The finding of any peer group review body of reason to take action against the provider's practice privileges.

(q) Misrepresentation or omission of any material information in the application for authorization to treat workers. (Chapter 51.04 RCW.)

(5) If the department finds reason to take corrective action, the department may also order one or more of the following:

(a) Recoupment of payments made to the provider, including interest; (Chapter 51.04 RCW.)

(b) Denial or reduction of payment;

(c) Assessment of penalties for each action that falls within the scope of subsection (4) (a) through (q) of this section; (Chapter 51.48 RCW.)

(d) Placement of the provider on a prepayment review status requiring the submission of supporting documents prior to payment;

(e) Requirement to satisfactorily complete remedial education courses and/or programs; and

(f) Imposition of other appropriate restrictions or conditions on the provider's privilege to be reimbursed for treating workers under the Industrial Insurance Act.

(6) The department shall forward a copy of any corrective action taken against a provider to the applicable disciplinary authority.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-015, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-015, filed 2/2/90, effective 3/5/90; 86-20-074 (Order 86-36), § 296-20-015, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-015, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-015, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-015, filed 11/24/76; effective 1/1/77; Order 74-4, § 296-20-015, filed 1/30/74; Order 71-6, § 296-20-015, filed 6/1/71; Order 70-12, § 296-20-015, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-015, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-01501 Physician's assistant rules.** (1) Physicians' assistants may perform only those medical services in industrial injury cases, for which the physician's assistant is trained and licensed, under the control and supervision of a licensed physician. Such control and supervision shall not be construed to require the personal presence of the supervising physician.

(2) Physicians' assistants may perform those medical services which are within the scope of their physician's assistant license for industrial injury cases within the limitations of subsection (3) of this section.

(3) Advance approval must be obtained from the department to treat industrial injury cases. To be eligible to treat industrial injuries, the physician's assistant must:

(a) Provide the department with a copy of his/her license.

(b) Provide the name and address and specialty of the supervising physician.

(c) Provide the department with the evidence of a reliable and rapid system of communication with the supervising physician.

(4) Physicians' assistants may prepare report of accident, time loss cards, and progress reports for the supervising physician's signature. Physicians' assistants cannot submit such information under his/her signature.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-01501, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-01501, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-01501, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-01501, filed 11/30/79, effective 1/1/80.]

**WAC 296-20-020 Acceptance of rules and fees.** The filing of an accident report or the rendering of treatment to a worker who comes under the department's or self-insurer's jurisdiction, as the case may be, constitutes acceptance of the department's medical aid rules and compliance with its rules and fees.

In accordance with RCW 51.28.020 of the industrial insurance law, when a doctor renders treatment to a worker entitled to benefits under the law, "it shall be the duty of the physician to inform the worker of his rights under this title and to lend all necessary assistance in making the application for compensation and such proof of other matters as required by the rules of the department without charge to the worker," a worker shall not be billed for treatment rendered for his accepted industrial injury or occupational disease.

The department or self-insurer must be notified immediately, when an unrelated condition is being treated concurrently with an industrial injury. See WAC 296-20-055 for specific information required.

When there is questionable eligibility, (i.e., service is not usually allowed for industrial injuries or investigation is pending, etc.) the provider may require the worker to pay for the treatment rendered.

In cases of questionable eligibility where the provider has billed the worker or other insurance, and the claim is subsequently allowed, the provider shall refund the worker or insurer in full and bill the department or self-insurer for services rendered using billing instructions, codes, and policies as listed in the medical aid rules and fee schedules.

Cases in which there is a question of medical ethics or quality of medical care, will be referred to the Washington state medical association's medical advisory and utilization review committee to the department of labor and industries for recommendations.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-020, 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), § 296-20-020, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-020, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-020, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-020, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-20-020, filed 11/22/74, effective 1/1/75; Order 71-6, § 296-20-020, filed 6/1/71; Order 70-12, § 296-20-020, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-020, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-023 Third party settlement—Excess recoveries.** (1) In cases where a third party settlement has been made resulting in an excess recovery subject to offset from the worker's future benefits or compensation due, the department or self-insurer is not liable for payment for services rendered by providers.

(2) The worker should be treated and billed in accordance with the department's medical aid rules and maximum fee schedules. When bills are processed against the amount of the excess recovery, the department will notify the provider on the remittance advice.

(3) The department or self-insurer will resume financial responsibility to or on behalf of the worker when the amount of such excess has been reduced to zero.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304. 93-23-060, § 296-20-023, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-023, filed 2/28/86, effective 4/1/86.]

**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) Nonscheduled drugs and medications during the acute phase of treatment for the industrial injury or condition.

(8) Scheduled drugs and other medications known to be addictive, habit forming or dependency inducing may be prescribed in quantities sufficient for treatment for a maximum of twenty-one days. If drug therapy extends beyond thirty days, see WAC 296-20-03003 regarding management.

(9) Injectable scheduled and other drugs known to be addictive, habit forming, or dependency inducing may be provided only on an in-patient basis. Hospital admission for administration of drugs for relief of chronic pain only will not be allowed.

(10) Diagnostic or therapeutic nerve blocks. See WAC 296-20-03001 for restrictions.

(11) Intra-articular injections. See WAC 296-20-03001 for restrictions.

(12) Myelogram if prior to emergency surgery.

[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 296-20-03001 Treatment requiring authorization.** Certain treatment procedures require authorization by the department or self-insurer. Requests for authorization must include a statement of: The condition(s) diagnosed; ICD-9-CM codes; their relationship, if any, to the industrial injury/exposure; an outline of the proposed treatment program, its length and components, procedure codes, and expected prognosis; and an estimate of when treatment would be concluded and condition stable.

(1) Office calls in excess of the first twenty visits or sixty days whichever occurs first.

(2) The department may designate those inpatient hospital admissions that require prior authorization.

(3) X-ray and radium therapy.

(4) Diagnostic studies other than routine x-ray and blood or urinalysis laboratory studies.

(5) Myelogram and discogram in nonemergent cases.

(6) Physical therapy treatment beyond initial twelve treatments as outlined in chapters 296-21, 296-23, and 296-23A WAC.

(7) Diagnostic or therapeutic injection. Epidural or caudal injection of substances other than anesthetic or contrast solution will be authorized under the following conditions only:

(a) When the worker has experienced acute low back pain or acute exacerbation of chronic low back pain of no more than six months duration.

(b) The worker will receive no more than three injections in an initial thirty-day treatment period, followed by a thirty-day evaluation period. If significant pain relief is demonstrated one additional series of three injections will be authorized. No more than six injections will be authorized per acute episode.

(8) Home nursing or convalescent center care must be authorized per provision outlined in WAC 296-20-091.

(9) Provision of prosthetics, orthotics, surgical appliances, special equipment for home or transportation vehicle; custom made shoes for ankle/foot injuries resulting in permanent deformity or malfunction of a foot; TNS units; masking devices; hearing aids; etc., must be authorized in advance as per WAC 296-20-1101 and 296-20-1102.

(10) Biofeedback program; pain clinic; weight loss program; psychotherapy; rehabilitation programs; and other programs designed to treat special problems must be authorized in advance. Refer to the department's medical aid rules and fee schedules for details.

(11) Prescription or injection of vitamins for specific therapeutic treatment of the industrial condition(s) when the attending doctor can demonstrate that published clinical studies indicate vitamin therapy is the treatment of choice for the condition. Authorization for this treatment will require presentation of facts to and review by department medical consultant.

(12) Injections of anesthetic and/or anti-inflammatory agents into the vertebral facet joints will be authorized to qualified specialists in orthopedics, neurology, and anesthesia, or other physicians who can demonstrate expertise in the procedure, AND who can provide certification their hospital privileges include the procedure requested under the following conditions:

(a) Rationale for procedure, treatment plan, and request for authorization must be presented in writing to the department or self-insurer.

(b) Procedure must be performed in an accredited hospital under radiographic control.

(c) Not more than four facet injection procedures will be authorized in any one patient.

(13) The long term prescription of medication under the specific conditions and circumstances in (a) and (b) are considered corrective therapy rather than palliative treatment and approval in advance must be obtained.

(a) Nonsteroidal anti-inflammatory agents for the treatment of degenerative joint conditions aggravated by occupational injury.

(b) Anticonvulsive agents for the treatment of seizure disorders caused by trauma.

(14) Intra-muscular and trigger point injections of steroids and other nonscheduled medications are limited to three injections per patient. The attending doctor must submit justification for an additional three injections if indicated with a maximum of six injections to be authorized for any one patient.

(15) The department may designate those diagnostic and surgical procedures which can be performed in other than a hospital inpatient setting. Where a worker has a medical condition which necessitates a hospital admission, prior approval of the department or self-insurer must be obtained.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-03001, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-03001, filed 2/2/90, effective 3/5/90; 86-20-074 (Order 86-36), § 296-20-03001, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-03001, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-03001, 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), § 296-20-03001, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-03001, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-03001, filed 11/30/79, effective 1/1/80; Order 76-34, § 296-20-03001, filed 11/24/76, effective 1/1/77.]

**WAC 296-20-035 Treatment in cases that remain open beyond sixty days.** Conditions requiring treatment beyond sixty days are indicative of a major industrial condition or complication by other conditions. Except in

cases of severe and extensive injuries, i.e., quadriplegia, paraplegia, multiple fractures, etc., when the worker requires treatment beyond sixty days following injury, a complete examination is necessary to determine and/or establish need for continued treatment and/or payment of time loss compensation. This may be accomplished either by the attending doctor or a consultation exam. In either case, a detailed exam report must be provided to the department or self-insurer. Refer to chapter 296-20 WAC (including the definition section) and department policy for the type of information that must be included in these reports.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-035, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.040.030 [51.04.030]. 87-08-004 (Order 87-09), § 296-20-035, filed 3/20/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-035, 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), § 296-20-035, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-035, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-035, filed 6/1/71; Order 70-12, § 296-20-035, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-035, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-051 Consultations.** In cases presenting diagnostic or therapeutic problems to the attending doctor, consultation with a specialist will be allowed without prior authorization. The consultant must submit his findings and recommendations immediately to the attending doctor and the department or self-insurer. Refer to chapter 296-20 WAC and department policy for reporting requirements.

Whenever possible, the referring doctor should make his x-rays and records available to the consultant to avoid unnecessary duplication. The department's consultation referral form may be used to convey information to the consultant. Consultants may proceed with indicated and reasonable x-rays or laboratory work and reasonable diagnostic studies as permitted within their scope of practice.

Consultations will be held with a specialist within a reasonable geographic area. Whenever possible, consultation should be made with a doctor outside the referring doctor's office or partnership.

The attending doctor will not arrange a consultation if he has received notification that a special or commission examination is being arranged by the department or self-insurer. If he has had recent consultation and is notified that the department or self-insurer is arranging an examination, he must immediately advise the department or self-insurer of the consultation.

The consultation fee will be paid only if a consultation report is complete and contains all pathological findings as well as all pertinent negative or normal findings. The report must be received in the department within fifteen days from the date of the consultation. No fee is paid to the consultant if the worker fails the appointment.

The consultant may not order, prescribe, or provide treatment without the approval of the attending doctor and the injured worker. No transfer will be made to the consultant without the prior approval of the attending doctor and the injured worker.

Consultation services will not be reimbursed for workers who are currently, or have been under the physician's care within the last three years. Such services should be billed as follow up visits, as listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-051, 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), § 296-20-051, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-051, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-051, filed 6/1/71; Order 70-12, § 296-20-051, filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-070.]

**WAC 296-20-06101 Reporting requirements.** The department or self-insurer requires several kinds of reports at various stages of the claim in order to authorize treatment, time loss compensation, and treatment bills. For additional information refer to the medical aid rules and fee schedules.

**Initial report of accident**: The first report required is the report of accident. The report of accident qualifies as the office note or report of the initial visit for Level 1 or 2 office calls. In addition to the office call charge, the doctor may bill for the filing of the accident report. Reimbursement of these services will be paid if the claim is allowed by the department or self-insurer. If the initial visit is a transfer case, a report is required. Billing for a Level 3, 4, or 5 initial visit may require submission of additional reports as required by department policy.

**Office notes**: Legible copies of office or progress notes are required for all follow-up visits. Office notes are not acceptable in lieu of requested narrative reports.

**Sixty-day narrative reports**: When conservative treatment is to continue beyond sixty days, submission of a narrative report is required to substantiate the need for continued care. A narrative report must contain basic information contained in chapter 296-20 WAC, or as determined by department policy. For this narrative report, the department or self-insurer will pay at a rate determined by department policy for a routine report in addition to a routine office call if the call is needed to provide the information. If the doctor supplies additional comprehensive information in the report, payment of a charge submitted in excess of the allowed fee will be considered. In most cases, payment for a narrative report in addition to a Level 3, 4, or 5 office visit will not be considered as the fee for those services includes a comprehensive report. A narrative report should be described as a "sixty-day report."

**Consultations reports**: Following one hundred twenty days of conservative care (nonsurgical cases), a consultation with the doctor of the attending doctor's choice is required to substantiate further treatment authorization. No prior authorization is required for such consultations. The department or self-insurer should be notified via a consultation referral form (LI-210-299). The consultant is responsible for submitting a copy of the report as outlined in chapter 296-20 WAC, or as determined by department policy, along with the bill to the department or self-insurer.

**Follow-up reports**: Following the one-hundred twenty day consultation, narrative reports are required at sixty-day intervals as outlined in chapter 296-20 WAC. The department or self-insurer will request additional consultations and/or special exams as warranted by the individual case.

**Hospital reports**: When workers are hospitalized it is the responsibility of the doctor to submit the reports to the hospital for submission with the hospital billing. The doctor may bill for hospital visits without attaching copies of the

reports. However, billing for operative procedures requires a copy of the operative report.

**Reopening application**: On claims closed over sixty days, the department or self-insurer will pay for completion of a reopening application, an office visit and diagnostic studies necessary to complete the application. (See chapter 296-20 WAC.) **No other benefits will be paid until the adjudication decision is rendered.**

[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 296-20-065 Transfer of doctors.** All transfers from one doctor to another must be approved by the department or self-insurer. Normally transfers will be allowed only after the worker has been under the care of the attending doctor for sufficient time for the doctor to: Complete necessary diagnostic studies, establish an appropriate treatment regimen, and evaluate the efficacy of the therapeutic program.

Under RCW 51.36.010 the worker is entitled to free choice of treating doctor. Except as provided under subsections (1) through (7) of this section, no reasonable request for transfer will be denied. The worker must be advised when and why a transfer is denied.

When a transfer is approved, the new attending doctor must be provided with a copy of the worker's treatment record by the previous attending doctor. X-rays in the possession of the previous attending doctor must be immediately forwarded to the new attending doctor for his or her retention as long as the worker remains under his or her care. Copies of x-rays and other records may be provided in lieu of originals.

The department or self-insurer reserves the right to require a worker to select another doctor or specialist for treatment, under the following conditions:

(1) When more conveniently located doctors, qualified to provide the necessary treatment, are available.

(2) When the attending doctor fails to cooperate in observance and compliance with the department rules.

(3) In time loss cases where reasonable progress towards return to work is not shown.

(4) Cases requiring specialized treatment, which the attending doctor is not qualified to render, or is outside the scope of the attending doctor's license to practice.

(5) Where the department or self-insurer finds a transfer of doctor to be appropriate and has requested the worker to transfer in accordance with this rule, the department or self-insurer may select a new attending doctor if the worker unreasonably refuses or delays in selecting another attending doctor.

(6) In cases where the attending doctor is not qualified to treat each of several accepted conditions. This does not preclude concurrent care where indicated. See WAC 296-20-071.

(7) No transfer will be approved to a consultant or special examiner without the approval of the attending doctor and the worker.

Transfers will be authorized for the foregoing reasons or where the department or self-insurer in its discretion finds that a transfer is in the best interest of returning the worker to a productive role in society.

When a worker's care is transferred to another doctor each doctor must submit a separate bill to the department or self-insurer for their portion of the care. Payment will be made at rates determined by department policy.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-065, 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), § 296-20-065, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-065, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-065, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-20-065, filed 12/1/77; Emergency Order 77-16, § 296-20-065, filed 9/6/77; Order 75-39, § 296-20-065, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-065, filed 1/30/74; Order 71-6, § 296-20-065, filed 6/1/71; Order 70-12, § 296-20-065, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-065, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-110 Dental.** Only dentists, oral surgeons or dental specialists licensed in the state in which they practice are eligible to treat workers entitled to benefits under the industrial insurance law.

If only a dental injury is involved, the doctor's portion of the report of accident must be completed by the dentist to whom the worker first reports. See WAC 296-20-025 for further information.

If the accident report has been submitted by another doctor, the dentist's report should be made by letter. In addition to the information required under WAC 296-20-025, the dentist should outline the extent of the dental injury and the treatment program necessary to repair damage due to the injury. Dental x-rays should be retained by the attending dentist for a period of not less than ten years. The department or self-insurer does not require submission of the actual films except upon specific request.

The department or self-insurer is responsible only for repair or replacement of teeth injured or dentures broken as a result of an industrial accident. Any dental work needed due to underlying conditions unrelated to the industrial injury is the responsibility of the worker. It is the responsibility of the dentist to advise the worker accordingly.

In cases presenting complication, controversy, or diagnostic or therapeutic problems, consultation by another dentist may be requested to support authorization for restorative repairs.

Bills covering the cost of dentures should be submitted for the denture only and should not include the cost for subsequent relining. If relining becomes necessary, authorization for relining must be obtained in advance from the department or self-insurer.

Bills must be submitted to the department or self-insurer within one year from the date the service is rendered. Bills must itemize the service rendered, including standard American Dental Association procedure codes, the materials used and the injured tooth number(s). See WAC 296-20-125 and department policy for further billing rules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-110, 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), § 296-20-110, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-110, filed 12/23/80, effective 3/1/81; Order 70-12, § 296-20-110, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-110, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-1102 Special equipment rental and purchase prosthetic and orthotics equipment.** The department or self-insurer will authorize and pay rental fee for equipment or devices if the need for the equipment will be for a short period of treatment during the acute phase of condition. Rental extending beyond sixty days requires prior authorization. If the equipment will be needed on long term basis, the department or self-insurer will consider purchase of the equipment or device. The department's or self-insurer's decision to rent or purchase an item of medical equipment will be based on a comparison of the projected rental costs of the item with its purchase price. An authorized representative of the department or self-insurer will decide whether to rent or purchase certain items, provided they are appropriate and medically necessary for treatment of the worker's accepted industrial condition. Decisions to rent or purchase items will be based on the following information:

(1) Purchase price of the item.

(2) Monthly rental fee.

(3) The prescribing doctor's estimate of how long the item will be needed.

The prescribing doctor must obtain prior authorization from the department or self-insurer, for rental or purchase of special equipment or devices. Also, all equipment (rentals and purchases), prosthetics, and orthotics must be billed using the appropriate codes, and billing forms, as determined by the medical aid rules and fee schedules.

The department or self-insurer will authorize and pay for prosthetics and orthotics as needed by the worker and substantiated by attending doctor. If such items are furnished by the attending doctor, the department or self-insurer will reimburse the doctor his cost for the item. See chapter 296-20 WAC (including WAC 296-20-124) and the fee schedules for information regarding replacement of such items on closed claims.

The department or self-insurer will repair or replace originally provided damaged, broken, or worn-out prosthetics, orthotics, or special equipment devices upon documentation and substantiation from the attending doctor.

Provision of such equipment requires prior authorization.

THE GRAVITY GUIDING SYSTEM, GRAVITY LUMBAR REDUCTION DEVICE, BACKSWING AND OTHER INVERSION TRACTION EQUIPMENT MAY ONLY BE USED IN A SUPERVISED SETTING. RENTAL OR PURCHASE FOR HOME USE WILL NOT BE ALLOWED NOR PAID BY THE DEPARTMENT OR SELF-INSURER.

EQUIPMENT NOT REQUIRING PRIOR AUTHORIZATION INCLUDES CRUTCHES, CERVICAL COLLARS, LUMBAR AND RIB BELTS, AND OTHER COMMONLY USED ORTHOTICS OF MINIMAL COST.

PERSONAL APPLIANCES SUCH AS VIBRATORS, HEATING PADS, HOME FURNISHINGS, HOT TUBS, WATERBEDS, EXERCISE BIKES, EXERCISE EQUIPMENT, JACUZZIES, PILLOWS, CASSETTE TAPES, EDUCATIONAL MATERIALS OR BOOKS, AND OTHER SIMILAR ITEMS WILL NOT BE AUTHORIZED OR PAID.

In no case will the department or self-insurer pay for rental fees once the purchase price of the rented item has been reached.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-1102, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-22-052 (Order 87-22), § 296-20-1102, filed 11/2/87; 86-06-032 (Order 86-19), § 296-20-1102, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-1102, 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), § 296-20-1102, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-1102, filed 12/23/80, effective 3/1/81.]

**WAC 296-20-1103 Travel expense.** The department or self-insurer will reimburse travel expense incurred by workers for the following reasons: (1) Examinations at department's or self-insurer's request; (2) vocational services at department's or self-insurer's request; (3) treatment at department rehabilitation center; (4) fitting of prosthetic device; and (5) upon *prior authorization* for treatment when worker must travel more than ten miles one-way from the worker's home to the nearest point of adequate treatment. Travel expense *is not* payable when adequate treatment is available within ten miles of injured worker's home, yet the injured worker prefers to report to an attending doctor outside the worker's home area.

Travel expenses will be reimbursed at the current department rate.

Receipts are required for all expenses except parking expenses under ten dollars.

Claims for reimbursement of travel expenses must be received by the department or self-insurer within one year after the date expenses are incurred. Refer to WAC 296-20-125 and to department policy for additional rules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-1103, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020. 91-12-010, § 296-20-1103, filed 5/30/91, effective 7/1/91. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-20-1103, 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), § 296-20-1103, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-1103, filed 12/23/80, effective 3/1/81.]

**WAC 296-20-115 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-20-120 Procedures not listed in this schedule.** Procedures not specifically listed will be given values comparable to those of the listed procedures of closest similarity. Refer to chapter 296-20 WAC (including the definition section) and the fee schedules for required billing documentation.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-120, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-120, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-120, filed 6/1/71; Order 70-12, § 296-20-120, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-120, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-125 Billing procedures.** All services rendered must be in accordance with the medical aid rules, fee schedules, and department policy. The department or

self-insurer may reject bills for services rendered in violation of these rules. Workers may not be billed for services rendered in violation of these rules.

(1) Bills must be itemized on department or self-insurer forms or other forms which have been approved by the department or self-insurer. Bills may also be transmitted electronically using department file format specifications. Providers using any of the electronic transfer options must follow department instructions for electronic billing. Physicians, osteopaths, advanced registered nurse practitioners, chiropractors, naturopaths, podiatrists, psychologists, and registered physical therapists use the national standard HCFA 1500 health insurance claim form with the bar code placed 2/10 of an inch from the top and 1 1/2 inches from the left side of the form. Hospitals use the UB-92 billing form for institution services and the national standard HCFA 1500 health insurance claim form with the bar code placed 2/10 of an inch from the top and 1 1/2 inches from the left side of the form for professional services. Hospitals should refer to chapter 296-23A WAC for billing rules pertaining to institution, or facilities, charges. Pharmacies use the department's statement for pharmacy services. Dentists, equipment suppliers, transportation services, vocational services, and massage therapists use the department's statement for miscellaneous services. When billing the department for home health services, providers should use the "statement for home nursing services." Providers may obtain billing forms from the department's local service locations.

(2) Bills must specify the date and type of service, the appropriate procedure code, the condition treated, and the charges for each service.

(3) Bills submitted to the department must be completed to include the following:

(a) Worker's name and address;

(b) Worker's claim number;

(c) Date of injury;

(d) Referring doctor's name and L & I provider account number;

(e) Area of body treated, including ICD-9-CM code(s), identification of right or left, as appropriate;

(f) Dates of service;

(g) Place of service;

(h) Type of service;

(i) Appropriate procedure code, hospital revenue code, or national drug code;

(j) Description of service;

(k) Charge;

(l) Units of service;

(m) Tooth number(s);

(n) Total bill charge;

(o) The name and address of the practitioner rendering the services and the provider account number assigned by the department;

(p) Date of billing;

(q) Submission of supporting documentation required under subsection (6) of this section.

(4) Responsibility for the completeness and accuracy of the description of services and charges billed rests with the practitioner rendering the service, regardless of who actually completes the bill form;

(5) Vendors are urged to bill on a monthly basis. Bills must be received within one year of the date of service to be considered for payment.

(6) The following supporting documentation is required when billing for services:

(a) Laboratory and pathology reports;

(b) X-ray findings;

(c) Operative reports;

(d) Office notes;

(e) Consultation reports;

(f) Special diagnostic study reports;

(g) For BR procedures - see chapter 296-20 WAC for requirements; and

(h) Special or closing exam reports.

(7) The claim number must be placed on each bill and on each page of reports and other correspondence in the upper right-hand corner.

(8) The following considerations apply to rebills.

(a) If you do not receive payment or notification from the department within one hundred twenty days, services may be rebilled.

(b) Rebills must be submitted for services denied if a claim is closed or rejected and subsequently reopened or allowed. In these instances, the rebills must be received within one year of the date the final order is issued which subsequently reopens or allows the claim.

(c) Rebills should be identical to the original bill: Same charges, codes, and billing date.

(d) In cases where vendors rebill, please indicate "REBILL" on the bill.

(9) The department or self-insurer will adjust payment of charges when appropriate. The department or self-insurer must provide the health care provider or supplier with a written explanation as to why a billing or line item of a bill was adjusted at the time the adjustment is made. A written explanation is not required if the adjustment was made solely to conform with the maximum allowable fees as set by the department. Any inquiries regarding adjustment of charges must be received in the required format within ninety days from the date of payment to be considered. Refer to the medical aid rules for additional information.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-125, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-20-125, filed 7/23/87; 86-20-074 (Order 86-36), § 296-20-125, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-125, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-125, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-125, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-125, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-20-125, filed 12/1/77; Emergency Order 77-16, § 296-20-125, filed 9/6/77; Order 75-39, § 296-20-125, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-20-125, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-20-125, filed 1/30/74; Order 71-6, § 296-20-125, filed 6/1/71; Order 70-12, § 296-20-125, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-125, filed 11/27/68, effective 1/1/69.]

**WAC 296-20-12501 Physician assistant billing procedure.** Billing for physician assistant services can be made only by the supervising physician at ninety percent of the value listed in the fee schedules. Payment will be made directly to the supervising physician. All physician assistant services must be identified by using physician assistant

modifiers, as listed in chapter 296-21 WAC and the fee schedules.

(1) Bills must be itemized on department or self-insurer forms, as the case may be, specifying: The date, type of service and the charges for each service.

(2) The bill form must be completed in detail to include the claim number. While the name of the physician's assistant rendering service must be included on the bill, all bills must be submitted under the supervising physician account number. Bills will be accepted when signed by other than the practitioner rendering services. When bills are prepared by someone else, the responsibility for the completeness and accuracy of the description of services and charges rests with the supervising physician.

(3) For a bill to be considered for payment, it must be received in the department or by the self-insurer within one year from the date each specific treatment and/or service was rendered or performed. Whenever possible, bills should be submitted monthly.

(4) Bills cannot be paid for services rendered while a claim is closed.

(5) The department or self-insurer may deny payment of bills for services rendered in violation of the medical aid rules or department policy. Workers may not be billed for services rendered in violation of these rules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-12501, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-12501, filed 11/30/79, effective 1/1/80.]

**WAC 296-20-12502 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-20-132 Determination of conversion factor adjustments.** Adjustments to the conversion factors for providers and services covered by the fee schedules and by department policy may occur annually following prior public hearings.

Such adjustments will be based on the estimated increase/decrease in the state's average wage for the current year and on other factors as determined by department policy. The following calendar year's estimate, of the average state wage will be adjusted to reflect the actual increase/decrease in the state's average wage for the preceding year.

The total percentage change for any one calendar year for the conversion factors may not exceed the total of the estimated increase/decrease in the current year, plus or minus the actual adjustment for the preceding calendar year.

Starting with services rendered on or after September 1, 1993, the department will adopt a new Washington State Resource Based Relative Value Scale. Due to the changes in reimbursement that will occur through implementation of this scale and supporting reimbursement policies, the department will transition its reimbursement levels over a few years. As a result, during this transition period, the fee schedules may list dollar values, instead of relative value units.

Payment for anesthesia services will continue to use base and time units. The fee schedules will not list dollar values for these services.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-132, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 88-24-011 (Order 88-28), § 296-20-132, filed 12/1/88, effective 1/1/89; 82-24-050 (Order 82-39), § 296-20-132, filed 11/29/82, effective 1/1/84.]

**WAC 296-20-135 Conversion factors.** (1) The following conversion factors are the base fees for determining the maximum amount paid by the department for procedures with specified unit values. Except for anesthesia services, during the transition period for services rendered on or after September 1, 1993, reimbursement levels cannot be determined by multiplying the conversion factor and a relative value unit. However, the conversion factors upon which the transition fees for nonanesthesia services are based are listed below (for informational purposes only). Refer to WAC 296-20-132 for additional information.

(2) The conversion factor or base fee for medicine, surgery, radiology, pathology, laboratory, chiropractic, physical therapy, occupational therapy, naturopathic physician, nurse practitioners procedure codes, and other providers, as determined by department policy is:

$34.51 for services rendered from September 1, 1993, to February 28, 1994.

$36.58 for services rendered after March 1, 1994.

(3) The conversion factor or base fee for anesthesia is $20.74.

[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.]

**WAC 296-20-170 Pharmacy—Acceptance of rules and fees.** Acceptance and filling of a prescription for a worker entitled to benefits under the industrial insurance law, constitutes acceptance of the department's rules and fees. When there is questionable eligibility, (i.e., no claim number, prescription is for medication other than usually prescribed for industrial injury; or pharmacist has reason to believe claim is closed or rejected), the pharmacist may require the worker to pay for the prescription. In these cases, the pharmacist must furnish the worker with a signed receipt and a nonnegotiable copy of the prescription including national drug code and quantity or a completed department pharmacy bill form signed in the appropriate areas verifying worker has paid for the prescribed item(s) in order for the worker to bill the department or self-insurer for reimbursement. The worker may not be charged more than the amount allowable by the department or self-insurer. The worker must submit such reimbursement request within one year of the date of service.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-170, 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), § 296-20-170, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-033 (Order 80-24), § 296-20-170, filed 12/1/80, effective 1/1/81; Order 76-34, § 296-20-170, filed 11/24/76, effective 1/1/77.]

**WAC 296-20-17002 Billing.** In addition to the billing procedures described in WAC 296-20-125 and in department policy the current national drug code number for each prescribed drug, followed by the average wholesale price to the pharmacy must be entered on each prescription. The department's statement for pharmacy services must be used when billing the department for NDC medications and supplies. The department's statement for miscellaneous services must be used when billing the department for non-NDC medications and supplies. In addition, the claimant's name, claim number, date of injury, prescribing doctor's name and department of labor and industries provider number; and the assigned department provider number for the pharmacy must be on the bill. Bills for medication not containing this information will be returned to the pharmacy. Billing must be made within one year of the date of service. It is requested bills be presented on a monthly basis.

When billing the department for compound prescriptions, providers must use the "Statement for Compound Prescriptions."

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-17002, 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), § 296-20-17002, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-20-17002, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-033 (Order 80-24), § 296-20-17002, filed 12/1/80, effective 1/1/81; Order 76-34, § 296-20-17002, filed 11/24/76, effective 1/1/77.]

## Chapter 296-21 WAC

## GENERAL REIMBURSEMENT POLICIES, BUNDLED CODES AND SERVICES, GLOBAL SURGERY POLICY, PSYCHIATRIC, BIOFEEDBACK, PHYSICAL MEDICINE, HCPCS CODES AND MODIFIERS, DEPARTMENT UNIQUE CODES, NONCOVERED PROVIDER TYPES, AND INDEPENDENT MEDICAL EXAMINATIONS

WAC



### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-21-140 Guidelines. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-140, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-150 Office or other outpatient services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-150, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-160 Hospital inpatient services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-160, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-170 Consultations. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-170, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-180 Emergency department services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-180, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-190 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-190, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-200 Critical care services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-200, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-210 Nursing facility services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-210, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-21-230 Case management services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-230, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

**WAC 296-21-140 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-150 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-160 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-170 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-180 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-190 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-200 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-210 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-230 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-21-240 General instructions.** In addition to the policies outlined in this chapter, all providers must follow appropriate rules contained in the medical aid rules and fee schedules.

**Unlisted service or procedure**

A service or procedure may be provided that does not have a reimbursement level listed in the fee schedules. When reporting such a service, the appropriate "unlisted procedure" code may be used to indicate the service, identifying it by "special report." When an "unlisted procedure" is rendered, a special report is required as supporting documentation. Refer to chapter 296-20 WAC (including the definition section), and fee schedules for additional information.

**After-hours, evening, and holiday services**

CPT codes 99050 (Medical Services After Office Hours), 99052 (services requested at night), and 99054 (Services requested on Sundays and holidays) are reimbursable only when services are provided outside the usual hours of operation and only where the medical record documents the medical necessity and urgency of the service. **Only one of these codes may be billed per patient per day.**

**Electrocardiograms**

Separate payment will be permitted for electrocardiograms (CPT codes 93000, 93010, 93040, and 93042) performed in conjunction with physician office services.

**Immunizations**

Immunization materials are reimbursed at the Estimated Acquisition Cost (EAC), plus an additional $2.00 for supplies. (The supply charge is included in the reimbursement level published in the fee schedules.) The codes and reimbursement levels for immunizations are listed in the fee schedules.

Evaluation and management procedure code 99211 may be billed in addition to an immunization when the immunization is the only service performed.

**Therapeutic or diagnostic injections**

If an evaluation and management service (E/M) is billed for a medical evaluation, procedure codes 90783, 90784, and 90798 and the appropriate HCPCS J and Q codes maybe billed in combination.

If no other service is performed on the same day (including E/M services), intramuscular (90782) and intramuscular antibiotic (90788) can be billed and will be paid in addition to a J or Q procedure code.

Intraarterial and intravenous diagnostic and therapeutic injection services (90783 and 90784) and intravenous therapy for severe allergic disease (90798) will be separately reimbursed as long as they are not provided in conjunction with IV infusion therapy services (90780 and 90781).

If procedure code 90798 is provided in conjunction with 90780 or 90781, it is considered "bundled" into the payment for 90780 or 90781 and will not be separately reimbursed.

Drugs must be billed using the HCPCS J and Q codes and reimbursement will be made at cost. The name, strength, and dosage of the drug(s) must be documented and retained in the patient's chart for review.

**Supplies**

Services and supplies provided must be medically necessary and must be prescribed by an approved provider for the direct treatment of a covered condition.

CPT code 99070, which represents miscellaneous supplies provided by the physician, is not reimbursable. **Providers must bill a specific HCPCS Level II code for supplies and equipment provided in the office incident to an office visit or other office services.**

Procedure codes for supplies that do not have a fee listed will be reimbursed at cost. An invoice must be retained in the provider's files. An invoice must be submitted with the bill for supplies costing $150.00 or more.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-240, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-250 Bundled services and supplies.**

**Bundled services:**

Under the fee schedules, some services are considered "bundled" into the cost of other procedures and will not be separately reimbursed. Refer to WAC 296-20-01002 (Definitions).

The fee schedules contain a listing of the bundled codes.

**Bundled supplies:**

Under the fee schedules, many supply items are considered "bundled" into the cost of other services (associated office visits or procedures) and will not be separately reimbursed. Refer to WAC 296-20-01002 (Definitions).

Separate payment will not be made for these items. The HCPCS codes for bundled supply items are listed in the fee schedules.

**Separate reimbursement for surgical trays used in the physician's office:**

Separate additional payment will be allowed for surgical trays only when they are used in conjunction with certain procedures performed in the physician's office. When one of these procedures is performed in the physician's office, the provider may report HCPCS Code A4550, surgical trays.

Procedures for which additional amount for supplies may be payable if performed in a physician's office are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-250, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-260 Global surgery policy.** Global surgery reimbursement **includes** the following services:

- The operation itself.
- Preoperative visits, in or out of the hospital, beginning on the day before the surgery.

- Services by the primary surgeon, in or out of the hospital, during a standard 90 day post-operative period (0 or 10 days for minor surgery).
- Dressing changes; local incisional care and removal of operative packs; removal of cutaneous sutures, staples, lines, wires, tubes, drains and splints; insertion, irrigation and removal of urinary catheters, routine peripheral IV lines, nasogastric and rectal tubes; and change and removal of tracheostomy tubes.
- All additional medical or surgical services required because of complications that do not require additional operating room procedures.

The department will allow separate payment when the preoperative or post-operative components of the surgery are performed by a physician other than the surgeon. The appropriate modifiers must be used.

Separate reimbursement will also be allowed for:

- The initial evaluation or consultation.
- The preoperative visits prior to the day before surgery.
- Post-operative visits for problems unrelated to the surgery.
- Post-operative visit for services that are not included in the normal course of treatment for the surgery.

When multiple surgeries are performed on the same patient on the same day, total payment equals the sum of:

100% of the global fee for the highest value procedure;

50% of the global fee for the second most expensive procedure;

25% of the global fee for the third though the fifth procedures.

Procedures in excess of five require submission of documentation and individual review to determine payment amount.

Multiple dermatological procedures:

When multiple **dermatological** procedures are performed, the policy distinguishes between multiple procedures grouped under one procedure code and individual procedures.

- For procedure codes that represent multiple surgical procedures, payment is made based on the fee schedule allowance associated with that code. Examples include:

  11201- removal of **additional** benign skin lesions
  17001- destruction of **additional** benign skin lesions

For other dermatological procedure codes that represent individual procedures, payment is made as follows:

First procedure is paid at 100%;

Second procedure is paid at 50%.

Procedures in excess of two require submission of documentation and individual review to determine payment amount.

Endoscopy procedures:

For endoscopic procedures and minor surgery, for which global surgical payment policy has not been generally used, payments are not allowed for a visit on the same day of the surgical or endoscopic procedure unless a documented, separately identifiable service is provided.

Multiple endoscopies and arthroscopies, that are related to the primary procedure, are paid as follows:

1. 100% payment for the endoscopy/arthroscopy with the highest relative value unit or dollar value.
2. For the next highest valued endoscopy/arthroscopy, payment will be based on the difference between this endoscopy and the base diagnostic endoscopy/arthroscopy.

Multiple endoscopies and arthroscopies, that are not-related (e.g., each is a separate and unrelated procedure) are paid as follows:

1. 100% for each unrelated procedure.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-260, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-270 Psychiatric services.** The following rules supplements information contained in the fee schedules regarding coverage and reimbursement for psychiatric services.

Treatment of mental conditions to workers is to be goal directed, time limited, intensive, and limited to conditions caused or aggravated by the industrial condition. Psychiatric services to workers are limited to those provided by psychiatrists and licensed psychologists, and according to department policy. For purposes of this rule, the term "psychiatric" refers to treatment by psychologists as well as psychiatrists.

Initial evaluation, and subsequent treatment must be authorized by department staff, as outlined by department policy. The report of initial evaluation, including test results, and treatment plan are to be sent to the worker's attending provider, as well as the department. A copy of sixty-day narrative reports to the department is also to be sent to the attending provider.

All providers are bound by the medical aid rules in chapter 296-20 WAC. Reporting requirements are defined in chapter 296-20 WAC. In addition, the following are required: Testing results with scores, scales, and profiles; report of raw data sufficient to allow reassessment by a panel or independent medical examiner. Use of the current Diagnostic and Statistical Manual of the American Psychiatric Association axis format in the initial evaluation and sixty-day narrative reports, and explanation of the numerical scales are required.

A report to the department will contain, at least, the following elements:

Subjective complaints;

Objective observations;

Assessment of the worker's condition and goals accomplished; and

Plan of care.

The codes, reimbursement levels, and other policies for psychiatric services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-270, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-280 Biofeedback rules.** Procedures listed in the fee schedules are for use by medical doctors, osteopathic physicians, licensed psychologists and other qualified providers as determined by department policy. All

providers of biofeedback are bound by the medical aid rules and fee schedule for biofeedback services.

Administration of biofeedback treatment is limited to those practitioners who are certified by the Biofeedback Certification Institute of America or who meet the minimum education, experience, and training qualifications to be so certified. Those practitioners wishing to administer biofeedback treatment to workers, must submit a copy of their biofeedback certification or supply evidence of their qualifications to the department or self-insurer.

(1) The department will authorize biofeedback treatment for the following conditions when accepted under the industrial insurance claim:

(a) Idiopathic Raynaud's disease;

(b) Temporomandibular joint dysfunction;

(c) Myofascial pain dysfunction syndrome (MPD);

(d) Tension headaches;

(e) Migraine headaches;

(f) Tinnitus;

(g) Torticollis;

(h) Neuromuscular reeducation as result of neurological damage in CVA or spinal cord injury;

(i) Inflammatory and/or musculoskeletal disorders causally related to the accepted condition.

(2) Twelve biofeedback treatments in a ninety-day period will be authorized for the above conditions when the following is presented:

(a) An evaluation report documenting:

(i) The basis for the claimant's condition;

(ii) The condition's relationship to the industrial injury;

(iii) An evaluation of the claimant's current functional measurable modalities (i.e., range of motion, up time, walking tolerance, medication intake, etc.);

(iv) An outline of the proposed treatment program;

(v) An outline of the expected restoration goals.

(b) No further biofeedback treatments will be authorized or paid for without substantiation of evidence of improvement in measurable, functional modalities (i.e., range of motion, up time, walking tolerance, medication intake, etc.). Only one additional treatment block of twelve treatments per ninety days will be authorized. Requests for biofeedback treatment beyond twenty-four treatments or one hundred eighty days will be granted only after file review by and on the advice of the department's medical consultant.

(c) In addition to treatment, pretreatment and periodic evaluation will be authorized. Follow-up evaluation can be authorized at one, three, six, and twelve months posttreatment.

(d) At the department's option, a concurring opinion may be required regarding relationship of the condition to the industrial injury and/or need for biofeedback treatment.

The codes, reimbursement levels, and other policies for biofeedback services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-280, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-290 Physical medicine.** The department or self-insurer will authorize and pay for physical medicine services only when the services are under the direct, continuous supervision of a physician who is "board qualified" in the field of physical medicine and rehabilitation, (except for subsections (1) and (2) of this section). The services must be carried out by the physician or registered physical therapist or a physical therapist assistant serving under the direction of a registered physical therapist, by whom he is employed.

The department or self-insurer will allow other licensed physicians to provide physical medicine modalities in the following situations:

(1) The primary attending physician may administer physical therapist modalities as listed under 97010 - 97039 and/or procedures as listed under 97110 - 97145 in the office. No more than six such visits will be authorized and paid to the attending physician. If the worker requires treatment beyond six visits, he/she must be referred to a registered physical therapist or a physiatrist for such treatment. The attending physician can bill an office visit in addition to the physical therapy visit for the same day if indicated. Refer to the department billing instructions regarding how to bill the physical therapy portion of the visit.

(2) In remote areas, where no registered physical therapist or physical therapist assistant is available, treatment by the attending physician with modalities listed under 97110 - 97145 may be billed under 1044M.

The codes, reimbursement levels, and other policies for physical medicine services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-290, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-300 HCPCS codes.** The department's fee schedules are based on the health care financing administration's common procedure coding system (HCPCS) Level I and II codes. The level I codes are also referred to as CPT codes.

The Level II codes, are referred to as HCPCS and consist of one alpha character, followed by four numbers. HCPCS are used to bill for miscellaneous services, supplies and materials.

The fee schedules contain the HCPCS Level I and II codes, code descriptions and modifiers as implemented by the department.

**Agency unique codes (Level III codes)**

Department unique codes and services, are referred to as Level III or "local" codes and consist of four numbers followed by one alpha character. For example, 1040M should be used to code completion of the department's accident report form.

A listing of the department's local codes and reimbursement levels are located in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-300, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-310 HCPCS billing modifiers.** The following modifiers and descriptions are based on the health care financing administration's common procedure coding system (HCPCS) as listed in the fee schedules.

- **20 Microsurgery**
  Use of this modifier will not change payment levels. It is for informational use only.

- **21 Prolonged evaluation and management service.**
  Use of this modifier will not change payment levels. It is for informational use only.
- **22 Unusual services**
  Procedures with this modifier may be individually reviewed prior to payment. Supporting documentation is required for this review.
- **23 Unusual anesthesia**
  Use of this modifier will not change payment levels. It is for informational use only.
- **24 Unrelated evaluation and management services by the same physician during a postoperative period**
  This modifier is used to indicate that an evaluation and management service was performed during a postoperative period that is not related to the surgical procedure. **Supporting documentation must be submitted with the claim when this modifier is used.**
  Payment will be made at one hundred percent of the fee schedule level.
- **25 Significant, separately identifiable evaluation and management (E/M) service by the same physician on the day of a procedure**
  This modifier is used to indicate that, on the day of a surgical procedure, a significant separately identifiable E/M service was required due to the patient's condition This E/M service is performed by the same physician; however, it must be unrelated to the usual preoperative and postoperative care associated with the surgical procedure that was performed. **Supporting documentation must be submitted with the claim when this modifier is used.**
  Payment will be made at one hundred percent of the fee schedule level.
- **26 Professional component**
  Certain procedures are a combination of the professional and technical components. This modifier should be used when only the professional component is reported. When a global service is rendered, neither the -26 nor -TC modifier should be used.
- **TC Technical component**
  Certain procedures are a combination of the professional and technical components. This modifier should be used when only the technical component is reported. When a global service is rendered, neither the -26 nor -TC modifier should be used.
- **30 Anesthesia**
  Add this modifier to the usual procedure number and use value listed in anesthesia column for normal, uncomplicated anesthesia.
- **32 Mandated service**
  Use of this modifier will not change payment levels. It is for informational use only.
- **47 Anesthesia by surgeon**
  When regional or general anesthesia is provided by the surgeon use the basic anesthesia value without the added value for time.
- **50 - Bilateral surgery**
  The bilateral modifier identifies cases where a procedure typically performed on one side of the body is, in fact, performed on both sides of the body. For surgical procedures typically performed on one side of the body that are, in a specific case, performed bilaterally, payment is made at one hundred fifty percent of the global surgery fee for the procedure. Providers must bill using two line items on the bill form. The modifier -50 should be applied to the second line item.
- **51 - Multiple surgery:**
  For procedure codes that represent multiple surgical procedures, payment is made based on the fee schedule allowance associated with that code. Examples of these codes include:

  11201 - Removal of **additional** benign skin lesions
  17001 - Destruction of **additional** benign skin lesions

  Refer to the global surgery rules for additional information.
- **52 Reduced services**:
  Payment will be made at the billed amount or the maximum allowable fee, whichever is less.
- **54, 55, and 56 - Providers furnishing less than the global surgical package**
  These modifiers are designed to ensure that the sum of all allowances for all practitioners who furnished parts of the services included in a global surgery fee do not exceed the total amount of the payment that would have been paid to a single practitioner under the global fee for the procedure. Three modifiers are used:

  **54 - Surgical care only** - When one physician performs a surgical procedure and another provides preoperative and/or postoperative management

  **55 - Postoperative management only** - When one physician performs the postoperative management and another physician has performed the surgical procedure

  **56 - Preoperative management only** - When one physician performs the preoperative care and evaluation and another physician performs the surgical procedure

  The payment policy pays each physician directly for the portion of the global surgery services furnished to the beneficiary.
- **62 - Two surgeons**

For surgery requiring the skills of two surgeons (each with a different specialty), each surgeon is reimbursed at 62.5 percent of the global surgical fee. No payment is made for an assistant-at-surgery in these cases.

- **66 - Team surgery**
  This modifier is used when highly complex procedures are carried out by a surgical team, which may include the concomitant services of several physicians, often of different specialties; other highly skilled, specially trained personnel; and various types of complex equipment.

  Procedures with this modifier are reviewed and priced on an individual basis. Supporting documentation is required for this review.

- **76 Repeat procedure by same physician**
  Use of this modifier will not change payment levels. It is for informational use only.

- **77 Repeat procedure by another physician**
  Use of this modifier will not change payment levels. It is for informational use only.

- **78 Return to the operating room for a related procedure during the postoperative period**
  Payment will be made at one hundred percent of the fee schedule level.

- **79 Unrelated procedure or service by the same physician during the postoperative period**
  Use of this modifier allows separate payment for procedures not associated with the original surgery. Payment will be made at one hundred percent of the fee schedule level.

- **80, 81, and 82 - Physicians who assist at surgery**
  Three modifiers may be used to identify procedures where a second physician assists another in the procedure. They are:

  - 80 - Assistant surgeon
  - 81 - Minimum assistant surgeon
  - 82 - Assistant surgeon (when qualified resident surgeon not available)

  Payment for procedures with these modifiers is made at the lower of the following:

  - Actual charge
  - Twenty percent of the global surgery amount for the procedure

- **90 Reference (outside) laboratory**
  Use of this modifier will not change payment levels. It is for informational use only.

- **99 Multiple modifiers**
  Under certain circumstances, two or more modifiers may be necessary to completely delineate a service. The fee schedules allow two modifiers to be applied to a service, with payment made based on the payment approach associated with each modifier.

  Under the fee schedules, this modifier must be used only when two or more modifiers affect pricing. The modifiers must be indicated on the appropriate billing form, (e.g., modifiers 26 and 50).

  Modifier 99 should only be used when two or more of the following modifiers are used:

  26 Professional component
  50 Bilateral surgery
  51 Multiple surgery
  54 Surgical care only
  55 Post operative care only
  56 Preoperative care only
  62 Two surgeons
  66 Surgical team
  80 Assistant surgeon
  81 Minimum assistant surgeon
  82 Assistant surgeon (when qualified resident surgeon not available)
  TC Technical component

Other Modifiers

RR This HCPCS level II modifier should be used to indicate that the durable medical equipment is rented rather than purchased. Payment will be made at the rate listed in the fee schedules.

Physician assistant services must be identified by the following modifiers when the physician bills for these services:

- AN For other than assistant at surgery (nonteam member).
- AS Assist at surgery team member (e.g., organ transplant team).
- AU For other than assist at surgery team member.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-310, filed 8/1/93, effective 9/1/93.]

**WAC 296-21-320 Provider types and services not covered.** The department will not pay for services performed by the following practitioners:

- Acupuncturists
- Herbalists
- Christian Science practitioners or theological healers
- Homeopathists
- Noncertified physician assistants
- Operating room technicians
- Certified surgical technicians
- Certified surgical assistants
- Any other licensed or unlicensed practitioners not otherwise specifically provided for by the department.

Refer to the chapter 296-20 WAC for definitions of doctor, health services practitioner, physician (WAC 296-20-

01002) and for the rules regarding who may treat (chapter 296-20 WAC).

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-320, filed 8/1/93, effective 9/1/93.]

## Chapter 296-21A WAC
## MEDICAL FEES

WAC

296-21A-010 through 296-21A-130 Repealed.

### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-21A-010 General information and instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-010, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-011 Footnotes. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-011, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030. and 1993 c 159

296-21A-013 Special services and reports. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-013, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-014 Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-014, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-01401 Special report. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-01401, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-035 Independent medical examinations. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-035, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-037 Examination reports. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-037, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-040 Independent medical examinations examiner. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-040, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-045 Independent medical examinations two or more examiners. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-045, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-046 Immunization injections. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-046, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-047 Therapeutic or diagnostic injections. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-047, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-050 Psychiatric services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-050, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-0501 Biofeedback rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-0501, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-0502 Biofeedback. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-0502, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-057 Monitoring services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-057, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-062 Eye. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-062, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-064 Ear. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-064, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-066 Cardiovascular. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-066, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-070 Pulmonary. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-070, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-075 Allergy and clinical immunology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-075, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-080 Neurology and neuromuscular. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-080, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-086 Chemotherapy administration. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-086, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-090 Special dermatological procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-090, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-095 Physical medicine. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-095, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-125 Anesthesia. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-125, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-128 Special services and billing procedures—Anesthesia. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21A-128, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

296-21A-130 Calculation of total anesthesia values. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, §

296-21A-130, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04 020, 51.04.030 and 1993 c 159.

**WAC 296-21A-010 through 296-21A-130 Repealed.** See Disposition Table at beginning of this chapter.

## Chapter 296-22 WAC
## SURGICAL FEES

WAC

296-22-010 through 296-22-475 Repealed.

### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-22-010 General information and instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-010, filed 12/1/92, effective 1/1/93; 91-17-038, § 296-22-010, filed 8/16/91, effective 9/16/91; 89-17-039 (Order 89-09), § 296-22-010, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-22-010, filed 1/8/87; 86-20-074 (Order 86-36), § 296-22-010, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-22-010, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-010, 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), § 296-22-010, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-010, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-010, filed 1/30/74; Order 70-12, § 296-22-010, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-22-010, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-016 Footnotes. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-016, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-016, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-017 Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-22-017, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-017, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-017, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-017, filed 12/3/80, effective 3/1/81; Order 76-34, § 296-22-017, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-01701 Special report. [Order 76-34, § 296-22-01701, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-020 Skin, subcutaneous and areolar tissues. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-020, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-020, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-020, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-020, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-020, filed 1/30/74; Order 68-7, § 296-22-020, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-021 Excision—Debridement. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-021, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-021, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-021, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-021, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-021, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-021, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-021, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-021, filed 1/30/74; Order 68-7, § 296-22-021, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-022 Introduction. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-022, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-022, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-022, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-022, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-022, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-022, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-022, filed 1/30/74; Order 68-7, § 296-22-022, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-023 Repair. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-023, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-023, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-023, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-023, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-023, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-023, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-023, filed 1/30/74; Order 68-7, § 296-22-023, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-024 Repair—Complex. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-024, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-024, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-21-024, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-024, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-024, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-024, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-024, filed 1/30/74; Order 68-7, § 296-22-024, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-025 Free skin grafts. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-025, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-025, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-025, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-025, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-025, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-025, 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), § 296-22-025, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-025, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-025, filed 1/30/74; Order 68-7, § 296-22-025, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-026 Burns, local treatment. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-026, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-026, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-026, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-026, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4),

51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-026, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-026, filed 1/30/74; Order 68-7, § 296-22-026, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-027 Destruction. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-027, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-027, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-027, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-027, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-027, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-027, filed 1/30/74; Order 68-7, § 296-22-027, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-030 Breast. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-030, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-030, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-030, filed 8/10/89, effective 9/10/89; 83-16-066 (Order 83-23), § 296-22-030, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-030, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-030, filed 1/30/74; Order 68-7, § 296-22-030, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-031 Breast. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-031, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-031, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-031, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-031, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-031, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-031, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-031, filed 1/30/74; Order 68-7, § 296-22-031, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-035 Musculoskeletal system. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-035, filed 12/1/92, effective 1/1/93; 89-17-039 (Order 89-09), § 296-22-035, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-035, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-035, filed 1/30/74; Order 68-7, § 296-22-035, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-036 General. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-036, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-036, filed 3/8/91, effective 5/1/91; 87-16-004 (Order 87-18), § 296-22-036, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-036, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-036, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-036, filed 1/30/74; Order 68-7, § 296-22-036, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-037 Excision. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-037, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-037, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-037, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-037, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-037, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-037, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-037, filed 1/30/74; Order 68-7, § 296-22-037, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-038 Introduction or removal. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-038, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-038, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-038, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-038, filed 7/23/87; 83-16-066 (Order 83-23), § 296-22-038, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-038, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-038, filed 1/30/74; Order 68-7, § 296-22-038, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-039 Reimplantation. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-039, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-039, filed 3/8/91, effective 5/1/91; 87-16-004 (Order 87-18), § 296-22-039, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-039, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-039, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-039, filed 1/30/74; Order 68-7, § 296-22-039, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-040 Grafts (or implants). [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-040, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-040, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-040, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-040, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-040, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-040, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-040, filed 1/30/74; Order 68-7, § 296-22-040, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-042 Head. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-042, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-042, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-042, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-042, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-042, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-042, 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), § 296-22-042, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-042, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-042, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-051 Neck (soft tissues) and thorax. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-051, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-051, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-051, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-051, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-051, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-051, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-051, filed 1/30/74.] Repealed by 93-16-072, filed

8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-052 Back and flank. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-052, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-052, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-052, filed 8/10/89, effective 9/10/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-053 Spine (vertebral column). [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-053, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-053, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-053, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-053, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-053, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-053, 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), § 296-22-053, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-053, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-053, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-061 Abdomen. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-061, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-061, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-061, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-061, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-061, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-061, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-061, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-061, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-063 Shoulder. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-063, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-063, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-063, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-063, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-063, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-063, 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), § 296-22-063, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-063, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-063, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-067 Humerus (upper arm) and elbow. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-067, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-067, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-067, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-067, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-067, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-067, 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), § 296-22-067, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-067, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-067, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-071 Forearm and wrist. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-071, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-071, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-071, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-071, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-071, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-071, 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), § 296-22-071, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-071, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-071, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-073 Hand and fingers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-073, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-073, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-073, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-073, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-073, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-073, 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), § 296-22-073, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-073, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-073, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-079 Pelvis and hip joint. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-079, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-079, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-079, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-079, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-079, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-079, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-079, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-082 Femur (thigh region) and knee joint. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-082, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-082, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-082, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-082, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-082, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-082, 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), § 296-22-082, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-082, filed 12/3/80, effective 3/1/81; Order 76-34, § 296-22-082, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-22-082, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-22-082, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-087 Leg (tibia and fibula) and ankle joint. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-087, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-087, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-087, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-087, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-087, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-087, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-087, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-087, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-091 Foot. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-091, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-091, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-091, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18),

§ 296-22-091, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-091, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-091, 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), § 296-22-091, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-091, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-091, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-095 Application of casts and strapping. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-095, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-095, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-095, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-095, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-095, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-095, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-097 Arthroscopy. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-097, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-097, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-097, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-097, filed 7/23/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-100 Respiratory system. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-100, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-100, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-100, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-100, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-100, 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), § 296-22-100, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-100, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-100, filed 1/30/74; Order 68-7, § 296-22-100, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-105 Accessory sinuses. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-105, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-105, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-105, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-105, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-105, 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), § 296-22-105, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-105, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-105, filed 1/30/74; Order 68-7, § 296-22-105, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-110 Larynx. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-110, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-110, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-110, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-110, 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), § 296-22-110, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-110, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-110, filed 1/30/74; Order 68-7, § 296-22-110, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-115 Trachea and bronchi. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-115, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-115, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-115, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-115, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-115, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-115, 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), § 296-22-115, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-115, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-115, filed 1/30/74; Order 68-7, § 296-22-115, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-116 Lungs and pleura. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-116, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-116, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-116, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-116, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-116, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-116, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-116, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-116, filed 1/30/74; Order 68-7, § 296-22-116, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-120 Heart and pericardium. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-120, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-120, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-120, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-120, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-120, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-120, 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), § 296-22-120, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-120, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-120, filed 1/30/74; Order 68-7, § 296-22-120, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-125 Arteries and veins. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-125, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-125, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-125, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-125, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-125, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-125, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-125, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-125, filed 1/30/74; Order 68-7, § 296-22-125, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-130 Spleen. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-130, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-130, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-130, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-130, filed 7/23/87; 83-16-066 (Order 83-23), § 296-22-130, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-130, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-130, filed 1/30/74; Order 68-7, § 296-22-130, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93.

Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-132 Bone marrow transplantation services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-132, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-132, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-132, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-135 Lymph nodes and lymphatic channels. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-135, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-135, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-135, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-135, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-135, 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), § 296-22-135, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-135, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-135, filed 1/30/74; Order 68-7, § 296-22-135, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-140 Mediastinum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-140, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-140, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-140, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-140, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-140, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-140, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-140, filed 1/30/74; Order 68-7, § 296-22-140, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-141 Diaphragm. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-141, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-141, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-141, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-141, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-141, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-141, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-141, filed 1/30/74. Formerly WAC 296-22-070 (part).] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-145 Mouth. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-22-145, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-145, filed 2/28/86, effective 4/1/86; Order 74-7, § 296-22-145, filed 1/30/74; Order 68-7, § 296-22-145, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-146 Lips. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-146, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-146, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-146, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-146, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-146, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-146, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-146, filed 1/30/74. Formerly WAC 296-22-145 (part).] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-147 Vestibule of mouth. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-147, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-147, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-147, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-147, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-147, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-147, filed 12/3/80, effective 3/1/81.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-150 Tongue, floor of mouth. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-150, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-150, filed 3/8/91, effective 5/1/91; 87-16-004 (Order 87-18), § 296-22-150, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-150, 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), § 296-22-150, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-150, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-150, filed 1/30/74; Order 68-7, § 296-22-150, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-155 Teeth and gums. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-155, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-155, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-155, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-155, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-155, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-155, filed 1/30/74; Order 68-7, § 296-22-155, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-160 Palate, uvula. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-160, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-160, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-160, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-160, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-160, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-160, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-160, filed 1/30/74; Order 68-7, § 296-22-160, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-165 Salivary glands and ducts. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-165, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-165, filed 3/8/91, effective 5/1/91; 87-16-004 (Order 87-18), § 296-22-165, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-165, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-165, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-165, filed 1/30/74; Order 68-7, § 296-22-165, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-170 Pharynx, adenoids and tonsils. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-170, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-170, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-170, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-170, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-170, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-170, filed 1/30/74; Order 68-7, § 296-22-170, filed

11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-180 Esophagus. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-180, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-180, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-180, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-180, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-180, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-180, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-180, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-180, filed 1/30/74; Order 68-7, § 296-22-180, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-190 Stomach. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-190, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-190, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-190, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-190, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-190, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-190, 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), § 296-22-190, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-190, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-190, filed 1/30/74; Order 68-7, § 296-22-190, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-195 Intestines (except rectum). [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-195, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-195, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-195, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-195, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-195, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-195, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-195, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-195, filed 1/30/74; Order 68-7, § 296-22-195, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-200 Meckel's diverticulum and the mesentery. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-200, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-200, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-200, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-200, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-200, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-200, filed 1/30/74; Order 68-7, § 296-22-200, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-205 Appendix. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-205, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-205, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-205, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-205, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-205, filed 1/30/74; Order 68-7, § 296-22-205, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-210 Rectum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-210, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-210, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-210, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-210, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-210, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-210, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-210, filed 1/30/74; Order 68-7, § 296-22-210, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-215 Anus. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-215, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-215, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-215, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-215, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-215, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-215, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-215, filed 1/30/74; Order 68-7, § 296-22-215, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-220 Liver. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-220, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-220, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-220, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-220, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-220, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-220, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-220, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-220, filed 1/30/74; Order 68-7, § 296-22-220, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-225 Biliary tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-225, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-225, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-225, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-225, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-225, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-225, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-225, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-225, filed 1/30/74; Order 68-7, § 296-22-225, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-230 Pancreas. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-230, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-230, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-230, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-230, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-230, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-230, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-230, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-230, filed 1/30/74; Order 68-7, § 296-22-230, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-235 Abdomen, peritoneum and omentum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-235, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-

22-235, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-235, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-235, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-235, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-235, 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), § 296-22-235, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-235, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-235, filed 1/30/74; Order 68-7, § 296-22-235, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-245 Kidney. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-245, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-245, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-245, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-245, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-245, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-245, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-245, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-245, filed 1/30/74; Order 68-7, § 296-22-245, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-250 Ureter. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-250, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-250, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-250, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-250, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-250, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-250, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-250, filed 1/30/74; Order 68-7, § 296-22-250, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-255 Bladder. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-255, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-255, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-255, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-255, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-255, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-255, 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), § 296-22-255, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-255, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-255, filed 1/30/74; Order 68-7, § 296-22-255, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-260 Urethra. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-260, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-260, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-260, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-260, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-260, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-260, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-260, filed 1/30/74; Order 68-7, § 296-22-260, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-265 Penis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-265, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-265, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-265, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-265, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-265, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-265, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-265, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-265, filed 1/30/74; Order 68-7, § 296-22-265, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-270 Testis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-270, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-270, filed 3/8/91, effective 5/1/91; 83-16-066 (Order 83-23), § 296-22-270, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-270, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-270, filed 1/30/74; Order 68-7, § 296-22-270, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-275 Epididymis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-275, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-275, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-275, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-275, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-275, filed 1/30/74; Order 68-7, § 296-22-275, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-280 Tunica vaginalis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-280, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-280, filed 3/8/91, effective 5/1/91. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-280, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-280, filed 1/30/74; Order 68-7, § 296-22-280, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-285 Scrotum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-285, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-285, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-285, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-285, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-285, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-285, filed 1/30/74; Order 68-7, § 296-22-285, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-290 Vas deferens. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-290, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-290, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-290, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-290, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-290, filed 1/30/74; Order 68-7, § 296-22-290, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-295 Spermatic cord. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-295, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-295, filed 3/8/91, effective 5/1/91. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), §

296-22-295, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-295, filed 1/30/74; Order 68-7, § 296-22-295, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-300 Seminal vesicles. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-300, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-300, filed 3/8/91, effective 5/1/91. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-300, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-300, filed 1/30/74; Order 68-7, § 296-22-300, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-305 Prostate. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-305, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-305, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-305, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-305, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-305, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-305, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-305, filed 1/30/74; Order 68-7, § 296-22-305, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-306 Intersex surgery. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-22-306, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(2), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-306, filed 12/3/80, effective 3/1/81.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-307 Perineum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-307, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-307, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-307, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-307, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-307, filed 1/30/74. Formerly WAC 296-22-335.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-310 Vulva and introitus. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-310, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-310, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-310, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-310, filed 7/23/87; 83-16-066 (Order 83-23), § 296-22-310, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-310, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-310, filed 1/30/74; Order 68-7, § 296-22-310, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-315 Vagina. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-315, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-315, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-315, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-315, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-315, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-315, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-315, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-315, filed 1/30/74; Order 68-7, § 296-22-315, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-325 Cervix uteri. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-325, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-325, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-325, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-325, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-325, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-325, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-325, filed 1/30/74; Order 68-7, § 296-22-325, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-330 Corpus uteri. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-330, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-330, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-330, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-330, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-330, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-330, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-330, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-330, filed 1/30/74; Order 68-7, § 296-22-330, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-333 Oviduct. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-333, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-333, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-333, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-333, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-333, 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), § 296-22-333, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-333, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-333, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-337 Ovary. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-337, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-337, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-337, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-337, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-337, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-337, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-337, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-337, filed 1/30/74. Formerly WAC 296-22-320.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-340 Maternity care and delivery. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-340, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-340, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-340, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-340, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-340, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-340, 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), § 296-22-340, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-340, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-340, filed 1/30/74; Order 68-7, § 296-22-340, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-350 Thyroid gland. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-350, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-350, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-350, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-350, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-350, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-350, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-350, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-350, filed 1/30/74; Order 68-7, § 296-22-350, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-355 Parathyroid, thymus, adrenal glands and carotid body. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-355, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-355, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-355, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-355, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-355, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-355, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-355, filed 1/30/74; Order 68-7, § 296-22-355, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-365 Skull, meninges, and brain. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-365, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-365, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-365, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-365, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-365, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-365, 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), § 296-22-365, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-365, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-365, filed 1/30/74; Order 68-7, § 296-22-365, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-370 Spine and spinal cord. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-370, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-370, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-370, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-370, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-370, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-370, 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), § 296-22-370, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-370, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-370, filed 1/30/74; Order 68-7, § 296-22-370, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-375 Extracranial nerves, peripheral nerves and autonomic nervous system. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-375, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-375, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-375, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-375, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-375, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-375, 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), § 296-22-375, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-375, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-375, filed 1/30/74; Order 68-7, § 296-22-375, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-405 Eyeball. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-405, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-405, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-405, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-405, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-405, 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), § 296-22-405, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-405, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-405, filed 1/30/74; Order 68-7, § 296-22-405, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-410 Anterior segment—Cornea. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-410, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-410, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-410, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-410, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-410, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-410, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-410, filed 1/30/74; Order 68-7, § 296-22-410, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-413 Anterior segment—Anterior chamber. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-413, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-413, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-413, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-413, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-413, filed 1/30/74. Formerly WAC 296-22-405 (part) and 296-22-415.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-415 Anterior segment—Anterior sclera. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-415, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-415, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-415, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-415, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-415, filed 1/30/74; Order 68-7, § 296-22-415, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-420 Anterior segment—Iris, ciliary body. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-420, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-420, filed 3/8/91, effective 5/1/91. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-22-420, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-420, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-420, filed 1/30/74; Order 68-7, § 296-22-420, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-425 Anterior segment—Lens. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-425, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-425, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-425, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-425, filed 7/23/87; 86-06-032

(Order 86-19), § 296-22-425, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-425, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-425, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-425, filed 1/30/74; Order 68-7, § 296-22-425, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-427 Posterior segment—Vitreous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-427, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-427, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-427, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-427, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-427, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-427, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-427, filed 1/30/74. Formerly WAC 296-22-425.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-430 Posterior segment—Retinal detachment. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-430, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-430, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-430, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-430, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-430, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-430, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-430, filed 1/30/74; Order 68-7, § 296-22-430, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-435 Ocular adnexa—Extraocular muscles. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-435, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-435, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-435, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-435, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-435, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-435, filed 1/30/74; Order 68-7, § 296-22-435, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-440 Ocular adnexa—Orbit. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-440, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-440, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-440, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-440, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-440, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-440, filed 1/30/74; Order 68-7, § 296-22-440, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-445 Ocular adnexa—Eyelids. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-445, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-445, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-445, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-445, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-445, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-445, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-445, filed 1/30/74; Order 68-7, § 296-22-445, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-450 Ocular adnexa—Conjunctiva. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-450, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-450, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-22-450, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-450, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-450, filed 1/30/74; Order 68-7, § 296-22-450, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-455 Ocular adnexa—Lacrimal system. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-455, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-455, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-455, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-455, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-455, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-455, filed 1/30/74; Order 68-7, § 296-22-455, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-465 External ear. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-465, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-465, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-465, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-465, 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), § 296-22-465, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-465, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-465, filed 1/30/74; Order 68-7, § 296-22-465, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-470 Middle ear. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-470, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-470, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-470, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-22-470, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-22-470, 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), § 296-22-470, filed 11/30/81, effective 1/1/82; 80-18-055 (Order 80-25), § 296-22-470, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-470, filed 1/30/74; Order 68-7, § 296-22-470, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-22-475 Inner ear. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-22-475, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-22-475, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-22-475, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-22-475, filed 7/23/87; 86-06-032 (Order 86-19), § 296-22-475, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 80-18-055 (Order 80-25), § 296-22-475, filed 12/3/80, effective 3/1/81; Order 74-7, § 296-22-475, filed 1/30/74; Order 68-7, § 296-22-475, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

**WAC 296-22-010 through 296-22-475 Repealed.** See Disposition Table at beginning of this chapter.

# Chapter 296-23 WAC

# RADIOLOGY, RADIATION THERAPY, NUCLEAR MEDICINE, PATHOLOGY, HOSPITAL, CHIROPRACTIC, PHYSICAL THERAPY, DRUGLESS THERAPEUTICS AND NURSING—DRUGLESS THERAPEUTICS, ETC.

WAC



## DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-23-010 General information—Radiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-010, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-010, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-010, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-010, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-010, filed 1/30/74; Order 71-6, § 296-23-010, filed 6/1/71; Order 70-12, § 296-23-010, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-010, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01001 Injection procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-01001, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-01001, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-

01001, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01002 Custody of x-rays. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-01002, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-01002, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-23-01002, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-01002, filed 12/1/77; Emergency Order 77-16, § 296-23-01002, filed 9/6/77; Order 76-34, § 296-23-01002, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01004 Billing procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-01004, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-01004, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-23-01004, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-01004, filed 12/1/77; Emergency Order 77-16, § 296-23-01004, filed 9/6/77; Order 76-34, § 296-23-01004, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01005 Duplication of x-rays and extra views. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-01005, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01005, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01006 Radiology, radiation therapy, nuclear medicine and modifiers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-01006, filed 8/16/91, effective 9/30/91; 89-17-039 (Order 89-09), § 296-23-01006, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23-01006, filed 1/8/87; 86-06-032 (Order 86-19), § 296-23-01006, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-01006, 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), § 296-23-01006, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-01006, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01006, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01007 Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-01007, filed 8/10/89, effective 9/10/89; 83-16-066 (Order 83-23), § 296-23-01007, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-01007, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01007, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-01008 Special report. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-01008, filed 12/1/92, effective 1/1/93; Order 76-34, § 296-23-01008, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-015 Head and neck. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-015, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-015, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-015, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-015, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-015, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-015, 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), § 296-23-015, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-015, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-015, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-061 (codified as WAC 296-23-015), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-015, filed 1/30/74; Order 68-7, § 296-23-015, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-020 Chest. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-020, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-020, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-020, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-020, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-020, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-020, 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), § 296-23-020, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-020, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-020, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-064 (codified as WAC 296-23-020), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-020, filed 1/30/74; Order 68-7, § 296-23-020, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-025 Spine and pelvis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-025, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-025, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-025, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-025, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-025, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-025, 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), § 296-23-025, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-025, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-025, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-067 (codified as WAC 296-23-025), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-025, filed 1/30/74; Order 68-7, § 296-23-025, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-030 Upper extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-030, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-030, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-030, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-030, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-030, 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), § 296-23-030, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-030, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-030, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-071 (codified as WAC 296-23-030), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-030, filed 1/30/74; Order 68-7, § 296-23-030, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-035 Lower extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-035, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-035, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-035, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-035, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-035, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-035, 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), § 296-23-035, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-035, filed 12/23/80, effective

3/1/81; Order 76-34, § 296-23-035, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-074 (codified as WAC 296-23-035), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-035, filed 1/30/74; Order 68-7, § 296-23-035, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-040 Abdomen. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-040, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-040, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-040, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-040, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-040, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-040, 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), § 296-23-040, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-040, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-040, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-077 (codified as WAC 296-23-040), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-040, filed 1/30/74; Order 68-7, § 296-23-040, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-045 Gastrointestinal tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-045, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-045, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-045, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-045, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-045, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-045, 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), § 296-23-045, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-045, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-045, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-045, filed 1/30/74; Order 68-7, § 296-23-045, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-050 Urinary tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-050, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-050, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-050, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-050, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-050, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-050, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-050, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-050, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-050, filed 1/30/74; Order 68-7, § 296-23-050, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-055 Female genital tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-055, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-055, filed 3/8/91, effective 5/1/91; 87-16-004 (Order 87-18), § 296-23-055, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-055, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-055, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-055, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-055, filed 1/30/74; Order 68-7, § 296-23-055, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-065 Vascular system. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-065, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-065, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-065, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-065, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-065, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-065, 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), § 296-23-065, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-065, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-065, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-065, filed 1/30/74; Order 68-7, § 296-23-065, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-079 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-079, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-079, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-079, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-079, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-079, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-079, 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), § 296-23-079, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-079, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-079, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-079, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07901 Diagnostic ultrasound. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07901, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07901, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07902 Head and neck. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07902, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07902, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07902, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07902, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07902, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07902, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07902, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07902, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07903 Heart and chest. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07903, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07903, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07903, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07903, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07903, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07903, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07903, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07903, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07905 Abdomen and retroperitoneum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07905, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07905, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07905, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07905, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07905, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), §

296-23-07905; filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07905, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07906 Pelvis, genitalia, and extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07906, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07906, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07906, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07906, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07906, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07906, 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), § 296-23-07906, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-07906, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07906, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07907 Vascular studies. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07907, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07907, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07907, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07907, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07907, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07907, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07907, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07907, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-07908 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07908, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07908, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07908, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07908, filed 7/23/87. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07908, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07908, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-080 Therapeutic radiology—General information and instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-080, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-080, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-080, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-080, filed 7/23/87; 83-16-066 (Order 83-23), § 296-23-080, 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), § 296-23-080, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-080, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-080, filed 1/30/74; Order 68-7, § 296-23-080, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-120 Nuclear medicine—General information and instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-120, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-120, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-125 Diagnostic. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-125, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-125, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-125, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-125, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-125, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-125, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-125, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-125, filed 1/30/74. Formerly WAC 296-23-100.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-130 Therapeutic. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-130, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-130, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-130, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-130, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-130, filed 1/30/74. Formerly WAC 296-23-095.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-200 Pathology general information and instruction. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-200, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-200, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-200, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-200, filed 1/30/74; Order 70-12, § 296-23-200, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-200, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-201 Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-201, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-201, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-201, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-20101 Special report. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-20101, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-20101, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-20102 Pathology modifier. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-20102, filed 8/16/91, effective 9/30/91; 89-17-039 (Order 89-09), § 296-23-20102, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23-20102, filed 1/8/87; 83-16-066 (Order 83-23), § 296-23-20102, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-20102, filed 12/23/80, effective 3/1/81.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-204 Panel or profile tests. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-204, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-204, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-204, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-204, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-204, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-204, 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), § 296-23-204, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-204, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-23-204, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-204, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93.

Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-208 Urinalysis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-208, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-208, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-208, filed 8/10/89; effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-208, 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), § 296-23-208, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-208, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-208, filed 1/30/74. Formerly WAC 296-23-245.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-212 Chemistry and toxicology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-212, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-212, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-212, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-212, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23-212, filed 1/8/87; 86-06-032 (Order 86-19), § 296-23-212, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-212, 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), § 296-23-212, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-212, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-212, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-216 Hematology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-216, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-216, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-216, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-216, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-216, 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), § 296-23-216, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-216, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-216, filed 1/30/74. Formerly WAC 296-23-210.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-221 Immunology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-221, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-221, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-221, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-221, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-221, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-221, 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), § 296-23-221, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-221, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-221, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-224 Microbiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-224, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-224, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-224, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-224, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-224, 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), § 296-23-224, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-224, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-224, filed 1/30/74. Formerly WAC 296-23-205.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-228 Anatomic pathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-228, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-228, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-228, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-228, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-228, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-228, 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), § 296-23-228, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-228, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-228, filed 1/30/74. Formerly WAC 296-23-240.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-231 Anatomic pathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-231, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-231, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-231, filed 8/10/89, effective 9/10/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-232 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-232, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-232, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-232, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-232, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-232, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-232, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-232, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-412 General information and instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-23-412, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-421 Diagnostic services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-421, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-421, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-421, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-430 Preventive services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-430, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-430, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-430, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-440 Restorative services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-440, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-440, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-440, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-450 Endodontics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-450, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-450, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-450, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-460 Periodontics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-460,

filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-460, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-460, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-470 Prosthodontics, removable—Including routine postdelivery care. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-470, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-470, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-470, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-480 Prosthodontics, fixed. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-480, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-480, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-480, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-485 Orthodontics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-485, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-485, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-490 Oral surgery. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-490, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-490, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-490, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-495 Adjunctive general services, anesthesia and professional consultation. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-495, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-495, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-495, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-500 Miscellaneous services and appliances. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-22-052 (Order 87-22), § 296-23-500, filed 11/2/87; 83-24-016 (Order 83-35), § 296-23-500, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50001 Nursing services and attendant care. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-05-041, § 296-23-50001, filed 2/13/92, effective 3/15/92; 86-06-032 (Order 86-19), § 296-23-50001, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50001, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50002 Transportation services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-23-50002, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-23-50002, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50002, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50003 Hearing aids and masking devices. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50003, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50003, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50004 Eyeglasses and contact lenses. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50004, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50004, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50005 Orthotics and prosthetics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50005, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50005, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50006 Medical supplies. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50006, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50006, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50007 Pulmonary and respiratory services and supplies. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50007, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50008 Hospital beds and accessories. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50008, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50008, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50009 Traction equipment. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50009, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50009, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50010 Canes. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50010, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50011 Crutches. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50011, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50012 Walkers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50012, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50012, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50013 Wheelchairs. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50013, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50013, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50014 Stimulators. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-22-052 (Order 87-22), § 296-23-50014, filed 11/2/87; 86-06-032 (Order 86-19), § 296-23-50014, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50014, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50015 Vehicle and home modification. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50015, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50016 Drug and alcohol rehabilitation services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50016, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-610 General instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-610, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-610, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-610, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-610, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-610, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-610, filed 1/30/74; Order 71-6, § 296-23-610, filed 6/1/71; Order 70-12, § 296-23-610, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-610, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-615 Office visits and special services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23-615, filed 7/23/87; 83-16-066 (Order 83-23), § 296-23-615, 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), § 296-23-615, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-615, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-615, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-615, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-615, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-615, filed 1/30/74; Order 68-7, § 296-23-615, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-620 Chiropractic consultations. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-620, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-620, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-620, filed 1/30/74; Order 68-7, § 296-23-620, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-710 Physical therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-710, filed 3/23/89, effective 5/1/89; 86-06-032 (Order 86-19), § 296-23-710, 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), § 296-23-710, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-710, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-710, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-710, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-710, filed 1/30/74; Order 71-6, § 296-23-710, filed 6/1/71; Order 70-12, § 296-23-710, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-710, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-715 Modalities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23-715, filed 7/23/87; 83-16-066 (Order 83-23), § 296-23-715, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-715, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-715, filed 1/30/74; Order 68-7, § 296-23-715, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-720 Procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-720, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-720, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-720, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-720, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-720, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-725 Tests and measurements. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-725, filed 8/16/91, effective 9/30/91; 87-08-004 (Order 87-09), § 296-23-725, filed 3/20/87; 86-06-032 (Order 86-19), § 296-23-725, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-725, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-725, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-725, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-730 Work hardening. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-730, filed 3/23/89, effective 5/1/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-810 General instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-810, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-810, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-810, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-810, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-810, filed 1/30/74; Order 71-6, § 296-23-810, filed 6/1/71; Order 70-12, § 296-23-810, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-810, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-811 Office visits and special services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23-811, filed 7/23/87. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-811, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-811, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-811, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-811, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-815, (codified as WAC 296-23-811), filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-811, filed 1/30/74; Order 68-7, § 296-23-811, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-900 Licensed nursing rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-18-028, § 296-23-900, filed 8/27/90, effective 9/27/90; 89-17-039 (Order 89-09), § 296-23-900, filed 8/10/89, effective 9/10/89; 86-20-074 (Order 86-36), § 296-23-900, filed 10/1/86, effective 11/1/86; 83-16-066 (Order 83-23), § 296-23-900, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-900, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-23-900, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-900, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-910 Licensed nursing billing instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-18-028, § 296-23-910, filed 8/27/90, effective 9/27/90; 86-20-074 (Order 86-36), § 296-23-910, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-23-910, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-910, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-910, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-950 Massage therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-950, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-960 Massage—Modalities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-20-074 (Order 86-36), § 296-23-960, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-23-960, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-970 Occupational therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-970, filed 3/23/89, effective 5/1/89; 86-06-032 (Order 86-19), § 296-23-970, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-980 Occupational therapy services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-980, filed 8/16/91, effective 9/30/91; 87-08-004 (Order 87-09), § 296-23-980, filed 3/20/87; 86-20-074 (Order 86-36), § 296-23-980, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-23-980, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-990 Work hardening. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-990, filed 3/23/89, effective 5/1/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

**WAC 296-23-010 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01001 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01002 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01004 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01005 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01006 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01007 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-01008 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-015 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-020 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-025 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-030 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-035 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-040 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-045 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-050 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-055 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-065 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-079 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07901 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07902 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07903 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07905 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07906 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07907 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-07908 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-080 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-120 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-125 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-130 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-135 General information—Radiology.** (1) Rules and billing procedures pertaining to all practitioners rendering services to workers are presented in the general instruction section beginning with WAC 296-20-010.

(2) Billing codes, reimbursement levels, and supporting policies are listed in the fee schedules.

(3) Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

(4) Refer to chapter 296-21 WAC for information on use of coding modifiers.

(5) The values listed in the fee schedules only apply when these services are performed by or under the responsible supervision of a doctor.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-135, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-140 Custody of x-rays.** (1) Radiographs should not be sent to the department or self-insurer unless they are requested for comparison and interpretation in determining a permanent disability, administrative or legal decisions, and for cases in litigation. X-rays must be retained for a period of ten years by the radiologist or the attending doctor.

(2) X-rays must be made available upon request to consultants, to medical examiners, to the department, to self-insurers, and/or the board of industrial insurance appeals.

(3) In cases where the worker transfers from one doctor to another, the former attending doctor will immediately forward all films in his possession to the new attending doctor.

(4) When a doctor's office is closed because of death, retirement, or upon leaving the state, department approved custodial arrangements must be made to insure availability on request. If a radiological office is closed for any of the previously listed reasons or because the partnership or corporation is being dissolved, disposition of x-rays for industrial injuries will be handled in the same manner. In the event custodial arrangements are to be made, the department must approve the arrangements prior to transfer of x-rays to the custodian so as to assure their availability to the department or self-insurer upon request.

(5) Refer to chapter 296-20 WAC (including WAC 296-20-125) and to chapter 296-21 WAC for additional information.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-140, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-145 Duplication of x-rays and extra views.** Every attempt should be made to minimize the number of x-rays taken for workers. The attending doctor or any other person or institution having possession of x-rays which pertain to the injury and are deemed to be needed for diagnostic or treatment purposes should make these x-rays available upon request.

The department or self-insurer will not authorize or pay for additional x-rays when recent x-rays are available except when presented with adequate information regarding the need to re-x-ray.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-145, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-150 Low osmolar contrast media.** Separate payment will not be made for contrast material, except in the case of low osmolar contrast media (LOCM) used in intrathecal, intravenous, and intraarterial injections for patients with one or more of the following conditions:

A history of previous adverse reaction to contrast material, with the exception of a sensation of heat, flushing, or a single episode of nausea or vomiting.

A history of asthma or allergy.

Significant cardiac dysfunction including recent imminent cardiac decompensation, services arrhythmias, unstable angina, pectoris, recent myocardial infraction, and pulmonary hypertension.

Generalized severe debilitation.

Sickle cell disease.

To bill for LOCM, use procedure HCPCS code A4648. The brand name of the LOCM and the dosage must be documented in the patient's chart. HCPCS codes and reimbursement levels are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-150, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-155 Pathology general information and instructions.** (1) Rules and billing procedures pertaining to all practitioners rendering service to workers are presented in general information section beginning with WAC 296-20-010.

(2) Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

(3) Refer to chapter 296-21 WAC for information on use of coding modifiers.

(4) Billing codes, reimbursement levels, and supporting policies are listed in the fee schedules.

(5) The reimbursement levels listed in the fee schedules apply only when the services are performed by or under the responsible supervision of a physician. Unless otherwise specified, the listed values include the collection and handling of the specimens by the laboratory performing the procedure. SERVICES IN PATHOLOGY AND LABORATORY are provided by the pathologist or by technologists under responsible supervision of a physician.

(6) Laboratory procedures performed by other than the billing physician shall be billed at the value charged that physician by the reference (outside) laboratory under the individual procedure number or the panel procedure number listed under "PANEL OR PROFILE TESTS" (see modifier -90).

(7) The department or self-insurer may deny payment for lab procedures which are determined to be excessive or unnecessary for management of the injury or conditions.

(8) Separate or multiple procedures: It is appropriate to designate multiple procedures that are rendered on the same date by separate entries.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-155, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-160 General information and instructions.** (1) The department or self-insurer is responsible only

for repair or replacement of teeth injured or prosthodontics broken as a result of an industrial injury.

(2) Information pertaining to industrial claims is explained in WAC 296-20-010.

(3) Information pertaining to reports of accident is outlined in WAC 296-20-025.

(4) Information pertaining to the care of workers is explained in WAC 296-20-110.

(5) An estimate of cost is not needed prior to authorization of dental work unless indicated due to the extensive nature of the dental work. The department or self-insurer reserves the right to review all charges billed.

(6) Billing instructions are listed in WAC 296-20-125. Bills for services must be itemized, specifying tooth numbers and materials used. No services will be paid on rejected or closed claims except those rendered in conjunction with a reopening application.

(7) Billing codes, billing modifiers, reimbursement levels, and supporting policies are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-160, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-165 Miscellaneous services and appliances.** (1) The department or self-insurer will reimburse for certain medically necessary miscellaneous services and items needed as a result of an industrial accident. Nursing care, attendant care, transportation, hearing aids, eyeglasses, orthotics and prosthetics, braces, medical supplies, oxygen systems, walking aids, and durable medical equipment are included in this classification.

(a) When a fee maximum has been established, the rate of reimbursement for miscellaneous services and items will be the supplier's usual and customary charge or the department's current fee maximum, whichever is less. In no case may a supplier or provider charge a worker the difference between the fee maximum and their usual and customary charge.

(b) When the department or self-insurer has established a purchasing contract with a qualified supplier through an open competitive request for proposal process, the department or self-insurer will require that workers obtain specific groups of items from the contractor. When items are obtained from a contractor, the contractor will be paid at the rates established in the contract. When a purchasing contract for a selected group of items exists, suppliers who are not named in the contract will be denied reimbursement if they provide a contracted item to a worker. The noncontracting supplier, not the worker, will be financially responsible for providing an item to a worker when it should have been supplied by a contractor. This rule may be waived by an authorized representative of the department or self-insurer in special cases where a worker's attending doctor recommends that an item be obtained from another source for medical reasons or reasons of availability. In such cases, the department may authorize reimbursement to a supplier who is not named in a contract. Items or services may be provided on an emergency basis without prior authorization, but will be reviewed for appropriateness to the accepted industrial condition and medical necessity on a retrospective basis.

(2) The department or self-insurer will inform providers and suppliers of the selected groups of items for which purchasing contracts have been established, including the beginning and ending dates of the contracts.

(3) Prior authorization by an authorized representative of the department or self-insurer will be required for reimbursement of selected items and services which are provided to workers. Payment will be denied for selected items or services supplied without prior authorization. The supplier, not the worker, will be financially responsible for providing selected items or services to workers without prior authorization. In cases where a worker's doctor recommends rental or purchase of a contracted item from a supplier who lacks a contract agreement, prior authorization will be required.

The decision to grant or deny prior authorization for reimbursement of selected services or items will be based on the following criteria:

(a) The worker is eligible for coverage.

(b) The service or item prescribed is appropriate and medically necessary for treatment of the worker's accepted industrial condition.

(4) The decision to rent or purchase an item will be made based on a comparison of the projected rental costs of the item with its purchase price. An authorized representative of the department or self-insurer will decide whether to rent or purchase certain items provided they are appropriate and medically necessary for treatment of the worker's accepted condition. Decisions to rent or purchase items will be based on the following information:

(a) Purchase price of the item.

(b) Monthly rental fee.

(c) The prescribing doctor's estimate of how long the item will be needed.

(5) The department will review the medical necessity, appropriateness, and quality of items and services provided to workers.

(6) The department's STATEMENT FOR MISCELLANEOUS SERVICES form or electronic transfer format specifications must be used for billing the department for miscellaneous services, equipment, supplies, appliances, and transportation. Bills must be itemized according to instructions in WAC 296-20-125 and the department or self-insurer's billing instructions. Bills for medical appliances and equipment must include the type of item, manufacturer name, model name and number, and serial number.

(7) All miscellaneous materials, supplies and services must be billed using the appropriate HCPCS Level II codes and billing modifiers. HCPCS codes are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-165, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-170 Nursing services and attendant care.** Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

See WAC 296-20-091 for qualifications.

The codes and fees for home nursing services and attendant care are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-170, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-175 Stimulators.** For qualifications regarding prior authorization and billing of stimulators refer to chapter 296-23 WAC (Miscellaneous services and appliances), WAC 296-20-1102, and 296-20-125.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-175, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-180 Vehicle and home modification.** Requires prior approval from the assistant director for industrial insurance.

8914H Home modification
8915H Vehicle modification

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-180, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-185 Drug and alcohol rehabilitation services.** Authorization requirements for these services may be found in WAC 296-20-03001 and 296-20-055.

0141M Intake evaluation
0142M Physical examination
0143M Individual therapy, routine visit
0144M Individual therapy, brief visit
0145M Group therapy
0146M Chemotherapy
0147M Medication adjustment
0149M Detoxification facility (room & board)

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-185, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-190 General instructions—Chiropractic.** (1) Refer to WAC 296-20-010 through 296-20-125 for general information and rules pertaining to treatment of workers.

(2) Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

Use the radiology codes and conversion factors to bill radiology procedures.

(3) In addition to the rules found in WAC 296-20-010 through 296-20-125, the following rules apply when chiropractic treatment is being rendered:

(a) No more than one chiropractic adjustment per day will be authorized or paid, except on the initial and next two subsequent visits. The attending doctor must submit a detailed report regarding the need for the additional treatment.

(b) Treatment beyond the first twenty treatments or sixty days, whichever comes first, will not be authorized without submission of a consultation report or a comprehensive comparative exam report regarding need for further care. (See WAC 296-20-051 re: Consultation.)

(c) If needed, x-rays immediately prior to and immediately following the initial chiropractic treatment may be allowed without prior authorization.

(d) X-rays before and after subsequent chiropractic treatment will not be paid unless previously authorized. Prior authorization must be obtained for x-rays subsequent to the initial treatment.

(e) No payment will be made for excessive or unnecessary x-rays taken on initial or subsequent visits.

(f) No services or x-rays will be paid on rejected or closed claims except those rendered in conjunction with a reopening application.

(g) See chapter 296-23 WAC for custody requirements for x-rays.

(h) Treatment as a maintenance or supportive measure will not be authorized nor paid.

(4) Billing procedures itemized in WAC 296-20-125 must be followed.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-190, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-195 Chiropractic consultations.** See WAC 296-20-035, 296-20-045, and 296-20-051 for rules pertaining to consultation.

Chiropractic consultation requires prior notification to the department or self-insurer. Consultants must be from an approved list of chiropractic consultants.

The codes and reimbursement levels for chiropractic consultations services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-195, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-200 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-201 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-20101 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-20102 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-204 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-205 General instructions—Naturopathic physicians.** (1) Refer to WAC 296-20-010 through 296-20-125 regarding general rules and billing procedures.

(2) Refer to WAC 296-20-132 and 296-20-135 regarding the use of conversion factors.

(3) In addition to general rules found in WAC 296-20-010 through 296-20-125, the following rules apply to naturopathic physicians:

(a) If the naturopathic physician is dual licensed, all treatment rendered by the practitioner must be billed as "treatment of the day." Further, the practitioner must elect and notify the department or self-insurer, which type of treatment he is providing for the injured worker, and abide by rules pertaining to area of elected treatment.

(b) Naturopathic physicians utilizing hydro-; mechano-; and/or electro- therapy modalities cannot bill for those services in addition to office visit services. Office visit includes treatment of the day.

(c) No more than one office visit will be allowed per day, except on the initial and next two subsequent visits.

The attending doctor must submit a detailed report regarding the need for the additional treatment.

(d) If necessary, x-rays may be taken immediately prior to and following the initial naturopathic physician treatment without prior authorization.

(e) X-rays immediately prior to and following each subsequent naturopathic physician treatment will be disallowed, unless previously authorized.

(f) Prior authorization must be obtained for x-rays subsequent to initial treatment.

(g) Payment will not be made for excessive or unnecessary x-rays. No payment will be made for x-rays taken on rejected or closed claims, except those taken in conjunction with a reopening application.

(h) See chapter 296-23 WAC for custody requirements for x-rays.

(4) Drugless therapy as a maintenance or supportive measure will not be authorized or paid.

(5) Treatment beyond the first twenty treatments or sixty days, whichever occurs first, will not be authorized without submission of a consultation report or a comprehensive comparative exam report regarding need for further care.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-205, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-208 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-210 Chiropractic office visits and special services.**

DEFINITIONS:

Routine office visit: A level of service pertaining to the evaluation and treatment of a condition requiring only an abbreviated history and exam, i.e.:

(1) Palpation, exam, and adjustment of one or more areas.

(2) Brief exam and no adjustment.

Extended office visit: A level of service pertaining to an evaluation of patient with a new or existing problem requiring a detailed history, review of records, exam, and a formal conference with patient or family to evaluate and/or adjust therapeutic treatment management and progress.

Comprehensive office visit: A level of service pertaining to an indepth evaluation of a patient with a new or existing problem, requiring development or complete reevaluation of treatment data; includes recording of chief complaints and present illness, family history, past treatment history, personal history, system review; and a complete exam to evaluate and determine appropriate therapeutic treatment management and progress.

REPORTING:

Reporting requirements are outlined in WAC 296-20-06101. The department or self-insurer will accept a brief narrative report of treatment received and the patient's progress as supporting documentation for billings in lieu of routine follow-up office notes.

CHIROPRACTIC MODIFIERS:

-22 UNUSUAL SERVICES: When treatment services provided are greater than that usually required for listed procedures. Use of this modifier must be based on the injured worker's need for extended or unusual care. A report is required; the modifier -22 should be added to the procedure number.

-52 REDUCED SERVICES: Under certain circumstances no treatment may be given, in these cases the procedure should be reduced and modifier -52 should be added to the procedure number.

MATERIAL SUPPLIED BY DOCTOR:

Department or self-insurer will reimburse the doctor for materials supplied, i.e., cervical collars, heel lifts, etc., at cost only. See RCW 19.68.010, professional license statutes.

Materials and supplies must be billed using the appropriate HCPCS Level II codes. Refer to chapter 296-21 WAC for additional information.

SPECIAL SERVICES:

The following services are generally part of the basic services listed in the maximum fee schedule but do involve additional expenses to the chiropractor for materials, for his time or that of his employees. These services are generally provided as an adjunct to common chiropractic services and should be used only when circumstances clearly warrant an additional charge over and above the usual charges for the basic services.

The codes and reimbursement levels for chiropractic services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-210, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-212 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-215 Office visits and special services—Naturopathic physicians.** Definitions:

Routine office visit: A level of service pertaining to the evaluation and treatment of a condition requiring only an abbreviated history and exam.

Extended office visit: A level of service pertaining to an evaluation of patient with a new or existing problem requiring a detailed history, review of records, exam, and a formal conference with patient or family to evaluate and/or adjust therapeutic treatment management and progress.

Comprehensive office visit: A level of service pertaining to an indepth evaluation of a patient with a new or existing problem, requiring development or complete reevaluation of treatment data; includes recording of chief complaints and present illness, family history, past treatment history, personal history, system review; and a complete exam to evaluate and determine appropriate therapeutic treatment management and progress.

Reporting:

Reporting requirements are outlined in WAC 296-20-06101. The department or self-insurer will accept a brief narrative report of treatment received and the patient's progress as supporting documentation for billings in lieu of routine follow-up office notes.

Modifiers:

-22 Unusual services: When treatment services provided are greater than that usually required for listed procedures. Use of this modifier must be based on the injured worker's need for extended or unusual care. A report is required. The modifier -22 should be added to the procedure number.

-52 Reduced services: Under certain circumstances no treatment may be given, in these cases the procedure should be reduced by ten units and modifier -52 should be added to the procedure number.

Material supplied by doctor:

Department or self-insurer will reimburse the doctor for materials supplied, i.e., cervical collars, heel lifts, etc., at cost only. See RCW 19.68.010, professional license statutes.

All supplies and materials must be billed using HCPCS Level II codes as listed in the fee schedules.

The codes and reimbursement levels are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-215, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-216 Repealed.** See Disposition Table at beginning of this chapter.

**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 296-21-095.

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 $63.65, 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, 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 296-23-221 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-224 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-225 Work hardening.** The department will publish billing instructions, reimbursement limits, quality assurance standards, utilization review guidelines, admission criteria, outcome criteria, measures of effectiveness, minimum staffing levels, certification requirements, special reporting requirements, and other criteria that will ensure workers receive good quality services at cost-effective payment levels. Providers will be required to meet the department's requirements in order to qualify as a work hardening provider. The department may also establish a competitive or other appropriate selection process for work hardening providers. Providers should refer to WAC 296-20-12050 regarding special programs.

Billing codes and reimbursement levels are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-225, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-228 Repealed.** See Disposition Table at beginning of this chapter.

**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 (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 $63.65 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, 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.]

**WAC 296-23-231 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-232 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-235 Work hardening.** The department will publish billing instructions, reimbursement limits, quality assurance standards, utilization review guidelines, admission criteria, outcome criteria, measures of effectiveness, minimum staffing levels, certification requirements, special reporting requirements, and other criteria that will ensure workers receive good quality services at cost-effective payment levels. Providers will be required to meet the department's requirements in order to qualify as a work hardening provider. The department may also establish a competitive or other appropriate selection process for work hardening providers. Providers should refer to WAC 296-20-12050 regarding special programs.

Billing codes, reimbursement levels, and supporting policies for work hardening services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-235, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-240 Licensed nursing rules.** (1) Registered nurses and licensed practical nurses may perform private duty nursing care in industrial injury cases when the attending physician deems this care necessary. Registered nurses may be reimbursed for services as outlined by department policy. (See chapter 296-20 WAC for home nursing rules.)

(2) Advanced registered nurse practitioners (ARNPs) may perform advanced and specialized levels of nursing care on a fee for service basis in industrial injury cases within the limitations of this section. ARNPs may be reimbursed for services as outlined by department policy.

(3) In order to treat workers under the Industrial Insurance Act, the advanced registered nurse practitioner must be:

(a) Recognized by the Washington state board of nursing or other government agency as an advanced registered nurse practitioner (ARNP). For out-of-state nurses an equivalent title and training may be approved at the department's discretion.

(b) Capable of providing the department with evidence and documentation of a reliable and rapid system of obtaining physician consultations.

(4) Billing procedures outlined in the medical aid rules and fee schedules apply to all nurses.

(5) Advanced registered nurse practitioners cannot sign accident report forms or time loss cards.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-240, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-245 Licensed nursing billing instructions.** (1) Registered nurses may be required to obtain provider account numbers from the department as outlined by department policy.

(2) Advanced registered nurse practitioners must obtain provider account numbers from the department.

(3) Refer to WAC 296-20-132 and 296-20-135 for information regarding the conversion factors.

(4) Refer to the department's billing instructions for additional information.

(5) Services performed by advanced registered nurse practitioners must be billed using the appropriate procedure code number listed in the fee schedules preceded by a Type of Service Code "N." The rate of reimbursement for the services billed by advanced registered nurse practitioners will be ninety percent of the value listed in the fee schedules.

(6) Refer to chapter 296-20 WAC (home nursing care) and chapter 296-23 WAC (miscellaneous services) for rules regarding reimbursement for home attendant care.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-245, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-250 Massage 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. See WAC 296-20-125 for billing instructions.

Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

Massage therapy treatment will be permitted when given by a licensed massage practitioner only upon written orders from the worker's attending doctor.

A progress report must be submitted to the attending doctor and the department or the self-insurer following six treatment visits or one month, whichever comes first. Massage therapy treatment beyond the initial six treatments will be authorized only upon substantiation of improvement in the worker's condition in terms of functional modalities, i.e., range of motion; sitting and standing tolerance; reduction in medication; etc. In addition, an outline of the proposed treatment program, the expected restoration goals, and the expected length of treatment will be required.

Massage therapy in the home and/or places other than the practitioners usual and customary business facilities will be allowed only upon prior justification and authorization by the department or self-insurer.

No inpatient massage 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.

Massage therapy treatments exceeding once per day must be justified by attending doctor.

Billing codes, reimbursement levels, and supporting policies for massage therapy services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-250, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-255 Independent medical examinations.** (1) Purpose:

Independent medical examinations may be requested by the department, the self-insurer, or the attending physician; this is usually for one of the following purposes:

(a) To establish a diagnosis. Prior diagnoses may be controversial or ill-defined;

(b) To outline a program of rational treatment, where treatment or progress is controversial;

(c) To establish medical data from which it may be determined whether the medical condition is industrially acquired, or unrelated to industrial work activities;

(d) To determine the extent and duration of aggravation of a preexisting medical condition by an industrial injury or exposure;

(e) To establish when the accepted medical condition has reached maximum benefit from treatment;

(f) To establish a percentage rating of any permanent disability, based on the loss of body function or the category rating when maximum recovery is reached; or

(g) To determine the medical indications for reopening of a claim for further treatment on the basis of aggravation of an accepted condition, based on objective findings.

(2) Workers who are scheduled for independent medical examinations are allowed to bring with them an accompanying person to be present during the physical examination. The accompanying person cannot be compensated in any manner, except that language interpreters may be necessary for the communication process and may be reimbursed for interpretative services.

The department may designate those conditions under which the accompanying person is allowed to be present during the independent medical examination process.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-255, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-260 Examination reports.** (1) It is the department's intention to purchase objective examinations to ensure that sure and certain determinations are made of all benefits to which the injured worker might be entitled.

The report of an independent medical examination must include the following items:

(a) A detailed chronology of the injury or condition including mechanism of injury, diagnostic studies, and treatments attempted. The chronology must mention the results of treatments and diagnostic studies;

(b) An opinion as to whether treatment actual or proposed is or will be curative or palliative in nature;

(c) An assessment of whether the condition is industrially caused, on a more probable than not basis;

(d) Specific diagnoses sorted into the following categories:

(i) The accepted condition;

(ii) Preexisting conditions, and a statement as to whether they are worsening on their own or are aggravated by the accepted industrially acquired condition; and

(iii) Conditions acquired after the industrial injury.

(e) Answers to written questions posed by adjudicators, or a description of what would be needed to address the questions; and

(f) Conclusions and a summary statement of the objective medical findings upon which the conclusions are based.

(2) Disability ratings are to be done as specified in WAC 296-20-210.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-260, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-265 Independent medical examinations examiner.** (1) Independent medical examinations must be performed in accordance with WAC 296-20-200 by examiners approved by the department and licensed to perform medicine and surgery, osteopathic medicine and surgery, podiatric medicine and surgery, or dentistry except:

(a) Attending physicians licensed to perform medicine and surgery, osteopathic medicine and surgery, podiatric medicine and surgery, or dentistry may perform an impairment rating examination for a worker under their care at the direction of the state fund or self-insurer.

(b) The independent medical examination may be performed by a board certified specialist licensed to perform medicine and surgery, osteopathic medicine and surgery, podiatric medicine and surgery, or dentistry selected by the department or the self-insurer if the worker does not live in Washington, Oregon, or Idaho.

(c) The independent medical examination may be performed by a treating physician in a department approved chronic pain management program accredited by the commission on accreditation of rehabilitation facilities. The examiner must be licensed to perform medicine and surgery, osteopathic medicine and surgery, podiatric medicine and surgery, or dentistry.

(2) All other examiners who wish to do independent medical examinations of workers under Title 51 RCW, whether purchased by the department or self-insurers, must:

(a) Submit a completed department application to the medical director at the department of labor and industries; and

(b) Receive the medical director's approval to be an "approved examiner."

(3) Approved examiners will be listed on the department's approved examiners list. Examiners may be suspended or removed from the approved examiners list by the medical director. Such examiners shall not receive worker referrals from the department or self-insurers.

(4) The factors the medical director may consider in approving or disapproving or suspending examiners include, but are not limited to, any one or a combination of the following:

(a) Board certification;

(b) Complaints from workers about the conduct of the examiner;

(c) Disciplinary proceedings or actions;

(d) Experience in direct patient care in the area of specialty;

(e) Ability to effectively convey and substantiate medical opinions and conclusions concerning workers;

(f) Quality and timeliness of reports; and

(g) Geographical need of the department and self-insurer.

(5) Examiners must be available and willing to testify at the department fee schedule rate on behalf of the department, worker, or employer.

(6) Complaints from workers about examiner conduct during an independent medical examination must be promptly forwarded from self-insurer and department staff to the office of the medical director.

(7) The standards for independent medical examiners, the application for approved examiner status and maximum fee schedule for performing examinations are published in a medical examiners' handbook available from the Office of the Medical Director, Department of Labor and Industries, Olympia, WA 98504.

(8) Fees for independent medical examinations are determined by the dollar value published in the medical examiners' handbook.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-265, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-270 Independent medical examinations two or more examiners.** Providers who wish to offer independent medical examinations by two or more examiners must apply for a panel provider number and meet standards set by the medical director of the department. Examiners working through panels must be on the approved list.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-270, filed 8/1/93, effective 9/1/93.]

**WAC 296-23-412 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-421 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-430 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-440 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-450 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-460 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-470 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-480 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-485 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-490 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-495 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-500 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50001 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50002 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50003 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50004 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50005 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50006 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50007 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50008 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50009 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50010 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50011 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50012 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50013 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50014 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50015 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-50016 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-610 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-615 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-620 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-710 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-715 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-720 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-725 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-730 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-810 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-811 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-900 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-910 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-950 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-960 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-970 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-980 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23-990 Repealed.** See Disposition Table at beginning of this chapter.

## Chapter 296-23A WAC
## HOSPITALS

WAC

## DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-23A-240 Head and neck. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-240, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-240, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-240, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-240, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-242 Chest. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-242, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-242, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-242, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-242, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-244 Spine and pelvis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-244, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-244, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-244, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-244, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-244, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-246 Upper extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-246, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-246, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-246, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-246, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-246, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-248 Lower extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-248, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-248, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-248, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-248, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-250 Abdomen. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-250, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-250, filed 3/8/91, effective 5/1/91; 87-03-005 (Order 86-47), § 296-23A-250, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-252 Gastrointestinal tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-252, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-252, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-252, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-252, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-252, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-254 Urinary tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-254, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-254, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-254, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-254, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-254, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-256 Gynecological and obstetrical. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-256, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-256, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-256, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-256, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-256, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-258 Vascular system. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-258, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-258, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-258, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-258, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-258, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-260 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-260, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-260, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-260, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-260, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-260, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-262 Diagnostic ultrasound. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-262, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-262, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-262, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-262, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-262, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-264 Therapeutic radiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-264, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-264, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-264, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-264, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-266 Nuclear medicine. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-266, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-266, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-266, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-266, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-266, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-268 Therapeutic. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-268, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-268, filed 3/8/91, effective 5/1/91; 87-03-005 (Order 86-47), § 296-23A-268, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-325 Panel or profile tests. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-325, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-325, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-325, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-325, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-325, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-330 Urinalysis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-330, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-330, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-330, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-330, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-335 Chemistry and toxicology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-335, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-335, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-335, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-335, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-335, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-340 Hematology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-340, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-340, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-340, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-340, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-340, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-345 Immunology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-345, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-345, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-345, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-345, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-345, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-350 Microbiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-350, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-350, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-350, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-350, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-355 Cytopathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-355, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-355, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-355, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-355, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-355, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-360 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-360, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-360, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-360, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-360, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-360, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-410 Muscle testing. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-410, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-415 Modalities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-415, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-420 Procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-420, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23A-425 Tests and measurements. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23A-425, filed 8/16/91, effective 9/30/91; 87-16-004 (Order 87-18), § 296-23A-425, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-425, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

**WAC 296-23A-100 General information.** Hospital services will be paid when necessary for treatment of the accepted industrial illness or injury. General information and rules pertaining to the care of workers are explained in chapter 296-20 WAC.

To avoid a delay in paying hospital bills be sure the claim number is listed in the space provided on the bill form. If the department's accident report form is completed at the hospital, then a preassigned claim number will be on the form. In other circumstances, the hospital may not be able to obtain the claim number from the injured worker or the attending physician prior to hospitalization and/or outpatient services. When this occurs, contact the local service location or call the department's provider toll-free line in Olympia. Self-insurers may be contacted directly to obtain claim numbers on self-insured claims.

Do not substitute the date of injury with either the date of admission or the date of service.

We urge you to submit bills to the department or self-insurer on a monthly basis.

The department or self-insurer will pay hospital inpatient charges for bed rest, physical therapy and/or administration of injectable drugs only under the conditions specified in WAC 296-20-075.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-100, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23A-100, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-100, filed 1/8/87.]

**WAC 296-23A-110 Hospital outpatient fee schedule information.** The maximum allowable fees for hospital outpatient radiology, pathology, laboratory, and physical therapy services are listed in the fee schedule. Only those

providers who are approved by the department will be reimbursed for services rendered. Refer to chapter 296-20 WAC for additional information.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-110, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-110, filed 1/8/87.]

**WAC 296-23A-115 Hospital outpatient services conversion factors.** Refer to WAC 296-20-132 and 296-20-135 for information on the conversion factor to be used with hospital outpatient services.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-115, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-02-063, § 296-23A-115, filed 12/28/90, effective 1/28/91; 88-24-011 (Order 88-28), § 296-23A-115, filed 12/1/88, effective 1/1/89; 87-03-005 (Order 86-47), § 296-23A-115, filed 1/8/87.]

**WAC 296-23A-130 Treatment of unrelated illness or injury.** Treatment or surgery for an unrelated illness or injury, while the worker is hospitalized or receiving hospital outpatient services, is not usually allowed. When such unrelated treatment is permitted by the department or self-insurer, the requesting physician must identify which services are needed due to the industrial illness or injury and which are needed due to the unrelated condition(s). Diagnostic tests and/or treatment for unrelated conditions directly affecting recovery from the industrial illness or injury may be given consideration as stated under chapter 296-20 WAC.

Diagnostic tests and studies ordered by the attending physician as a part of the initial care and diagnosis of an industrial injury will be allowed.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-130, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-130, filed 1/8/87.]

**WAC 296-23A-150 Billing procedures.** Bills for hospital services must be submitted on the current National Uniform Billing Form (billing form) or submitted electronically using department file format specifications. Providers using the billing form must follow the billing instructions provided by the Washington State Hospital Association. Providers using any of the electronic transfer options must follow department instructions for electronic billing in addition to instructions provided by the Washington State Hospital Association. Self-insurers may accept other bill forms.

(1) The following information must appear on the billing form for hospital inpatient services:

(a) Provider name, address, and telephone number;
(b) Patient control number;
(c) Type of bill;
(d) Federal tax number;
(e) Patient name;
(f) Birth date;
(g) Sex;
(h) Admission date;
(i) Admission hour;
(j) Type of admission;
(k) Source of admission;
(l) Condition code, when applicable;
(m) Patient status;
(n) Statement covers period;
(o) Date of injury;
(p) Revenue code;
(q) Revenue code description;
(r) Daily rate;
(s) Units;
(t) Total charges;
(u) Noncovered charges;
(v) Payer;
(w) Department provider number;
(x) Prior payments;
(y) Patient's Social Security number;
(z) Claim number;
(aa) Treatment authorization number;
(bb) Employer name;
(cc) Principle and other International Classification of Diseases (ICD) diagnosis codes when applicable (indicate side of body: R = right, L = left, and B = both sides of body);
(dd) Admitting diagnosis;
(ee) E code;
(ff) Principle and other ICD procedure codes when applicable;
(gg) Attending physician; and
(hh) Date billed.

Summarize inpatient charges by revenue codes as specified in the billing instructions.

(2) The following information must appear on the billing form for hospital **outpatient** services:

(a) Provider name, address, and telephone number;
(b) Patient control number;
(c) Type of bill;
(d) Federal tax number;
(e) Patient name;
(f) Birth date;
(g) Sex;
(h) Statement covers period;
(i) Date of injury;
(j) Revenue code;
(k) Revenue code description;
(l) Health Care Financing Administration Common Procedure Coding System (HCPCS) Level I codes, or other codes, as adopted by the department, for radiology, pathology and laboratory and physical therapy services;
(m) Units;
(n) Total charges;
(o) Noncovered charges;
(p) Payer;
(q) Department provider number;
(r) Prior payments;
(s) Patient's Social Security number;
(t) Claim number;
(u) Treatment authorization number, when applicable;
(v) Employer name;
(w) Principle and other ICD diagnosis codes when applicable (indicate side of body: R = right, L = left, and B = both sides of body);
(x) E code;
(y) Principle and other ICD procedure codes, when applicable;

(z) Attending physician; and
(aa) Date billed.

(3) Supporting documentation for inpatient and outpatient services must be sent to the department or self-insurer. When sending supporting documentation to the department, it should not be submitted along with the bill for services. Hospitals should instead send the supporting documentation to:

Department of Labor and Industries
Claims Section
PO Box 44291
Olympia, WA 98504-4291

Place the claim number on the upper right hand corner of each attachment. The information to be sent includes, but is not limited to the following:

(a) Admission history and physical examination;
(b) Discharge summary for stays over forty-eight hours;
(c) Emergency room reports; and
(d) Operative reports.

Providers using any of the electronic transfer options provided by the department must send the department the required documentation normally associated with a bill, within thirty calendar days of the date billing information was sent to the department on electronic mediums. Providers must comply with electronic billing instructions supplied by the department regarding the submission of hospital bill documentation. Place the claim number on the upper right hand corner of each supporting document submitted.

(4) For a bill to be considered for payment, it should be received by the department or self-insurer within one year from the date of service. Refer to chapter 296-20 WAC and to department policy for additional information.

(5) The department or the self-insurer may reject bills for services rendered in violation of the medical aid rules and maximum fee schedules.

(6) Charges for ambulance services and for professional services provided by hospital staff physicians must be submitted on the Health Insurance Claim Form, HCFA-1500. Hospitals using any of the electronic transfer options must follow department instructions for electronic billing in addition to department instructions for completing the Health Insurance Claim Form, HCFA-1500. The emergency room will be considered the office for those physicians providing regular emergency room care to the hospital, and fees will be allowed on this basis.

(7) Call-back services between 6 p.m. and 8 a.m., of surgical staff not normally on duty during this period of time, should be billed using the appropriate revenue codes.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-150, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-23A-150, filed 2/2/90, effective 3/5/90; 87-16-004 (Order 87-18), § 296-23A-150, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-150, filed 1/8/87.]

**WAC 296-23A-200 General information—Hospital outpatient radiology.** Rules and billing procedures pertaining to all practitioners rendering services to workers are presented in the general instructions section beginning with WAC 296-20-010 and in department billing instructions. Some of the similarities are repeated here for the convenience of those hospitals referring to the radiology section. The procedure codes and maximum allowable fees for radiology services are listed in the fee schedules. Refer to WAC 296-20-132 and 296-20-135 regarding use of a conversion factor.

Radiology procedures and services must be performed by or under the supervision of a physician.

The department or self-insurer may deny payment for radiology procedures which are determined to be excessive or unnecessary for management of the accepted industrial illness or injury.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-200, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-200, filed 1/8/87.]

**WAC 296-23A-205 Billing procedures.** (1) Department billing instructions appear in chapter 296-20 WAC and in department policy. Hospital billing information and instructions appear in WAC 296-23A-100, 296-23A-105, and 296-23A-150.

(2) Hospitals are reimbursed only for the technical component at rates, listed in the fee schedules, or as determined by department policy.

(3) Hospitals should bill their usual and customary rates for the technical component of outpatient radiology services.

(4) Radiology procedures performed by other than the billing hospital shall be billed at the value charged the hospital by the reference (outside) radiology department. When possible, the service should be billed under the same procedure code as billed by the reference radiology department.

(5) "BR" in the unit value column 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 should provide an adequate definition or description of the services or procedures as discussed in WAC 296-23A-235. Whenever possible, list the nearest similar procedure code according to this schedule. The department or self-insurer may adjust BR procedures when such action is indicated.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-205, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23A-205, filed 8/16/91, effective 9/30/91; 89-17-039 (Order 89-09), § 296-23A-205, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-205, filed 1/8/87.]

**WAC 296-23A-230 Unlisted service or procedure.** A radiology service or procedure may be provided that is not listed in the fee schedules. When reporting such a service, the appropriate "unlisted procedure" code may be used to indicate the service, identifying it by "special report" as discussed in WAC 296-23A-235.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-230, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-230, filed 1/8/87.]

**WAC 296-23A-235 Special report.** A service that is rarely provided, unusual, variable, or new, may require a special report in determining medical appropriateness of the service. Pertinent information should include an adequate

definition or description of the nature, extent, and need for the procedure; and the time, effort and equipment necessary to provide the service. Additional items which may be helpful include: Complexity of symptoms, final diagnosis, pertinent physical findings, diagnostic and therapeutic procedures, concurrent problems, and follow-up care.

Refer to chapter 296-20 WAC for additional information.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-235, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-235, filed 1/8/87.]

**WAC 296-23A-240 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-242 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-244 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-246 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-248 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-250 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-252 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-254 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-256 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-258 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-260 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-262 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-264 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-266 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-268 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-300 General information—Hospital outpatient pathology and laboratory.** Rules and billing procedures pertaining to all practitioners rendering services to workers are presented in the general instructions section beginning with WAC 296-20-010 and in department policy. Some of the similarities are repeated here for the convenience of those hospitals referring to the pathology and laboratory section. The procedure codes and maximum allowable fees for pathology and laboratory services are listed in the fee schedules. Refer to WAC 296-20-132 and 296-20-135 regarding use of a conversion factor. Pathology and laboratory services must be performed by or under the supervision of a physician.

Unless otherwise specified, the fee maximums include the collection and handling of the specimens by the laboratory performing the procedure.

The department or self-insurer may deny payment for pathology or laboratory procedures which are determined to be excessive, unrelated, or unnecessary for management of the accepted industrial illness or injury.

By report: "BR" in the unit value column indicates that the value of the 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 should provide an adequate definition or description of the services or procedure as discussed in WAC 296-23A-315. Whenever possible, list the nearest similar procedure code according to this schedule. The department or self-insurer may adjust BR procedures when such action is indicated.

It is appropriate to designate separate or multiple procedures that are rendered on the same date by separate entries.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-300, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23A-300, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-300, filed 1/8/87.]

**WAC 296-23A-310 Billing procedures.** (1) Department billing instructions appear in WAC 296-20-125 and in department policy. Hospital information and billing instructions appear in WAC 296-23A-100, 296-23A-105, and 296-23A-150.

(2) Hospitals are reimbursed only for the technical component at rates listed in the fee schedules, or as determined by department policy.

(3) Hospitals should bill their usual and customary rates for the technical component of outpatient pathology and laboratory services.

(4) Laboratory procedures performed by other than the billing hospital shall be billed at the value charged the hospital by the reference (outside) laboratory. When possible, the service should be billed under the same procedure code or panel procedure number listed under "PANEL OR PROFILE TESTS" used by the reference laboratory.

(5) Laboratory reports must be attached to the bills for laboratory services.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-310, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-310, filed 1/8/87.]

**WAC 296-23A-315 Unlisted service or procedure.** A pathology or laboratory service or procedure may be provided that is not listed in the fee schedules. When reporting such a service, the appropriate "unlisted procedure" code may be used to indicate the service, identifying it by "special report" as discussed in WAC 296-23A-320.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-315, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-315, filed 1/8/87.]

**WAC 296-23A-320 Special report.** A service that is rarely provided, unusual, variable or new may require a special report in determining medical appropriateness of the service. Pertinent information should include an adequate definition or description of the nature, extent, and need for the procedure; and the time, effort, and equipment necessary to provide the service. Additional items which may be helpful include: Complexity of symptoms, final diagnosis, pertinent physical findings, diagnostic and therapeutic procedures, concurrent problems, and follow-up care.

For additional information refer to chapter 296-20 WAC.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-320, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-320, filed 1/8/87.]

**WAC 296-23A-325 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-330 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-335 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-340 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-345 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-350 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-355 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-360 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-400 Hospital outpatient physical therapy rules.** Hospitals should refer to chapter 296-20 WAC for general information and rules, and to department billing instructions pertaining to the care of workers and the billing of services.

The procedure codes and maximum allowable fees for physical therapy services are listed in the fee schedules. Also refer to WAC 296-20-132 and 296-20-135 regarding use of the conversion factor.

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.

The department or self-insurer will review the quality and medical necessity of physical 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 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 a flat dollar rate of $63.65, whichever is less. These limits will not apply to physical 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 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.

No inpatient physical therapy treatment will be allowed when such treatment constitutes the only or major treatment received by the worker. See WAC 296-20-075 and 296-23A-100 for further information.

Biofeedback treatment may be rendered on physician'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 and department policy for rules pertaining to the authorized conditions and the reporting requirements. 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).

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045, § 296-23A-400, filed 12/30/93, effective 3/1/94; 93-16-072, § 296-23A-400, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23A-400, filed 3/23/89, effective 5/1/89; 87-03-005 (Order 86-47), § 296-23A-400, filed 1/8/87.]

**WAC 296-23A-410 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-415 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-420 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-23A-425 Repealed.** See Disposition Table at beginning of this chapter.

## Chapter 296-24 WAC
## GENERAL SAFETY AND HEALTH STANDARDS

WAC



**WAC 296-24-11003 Definitions applicable to this part.** (1) Affected employee. An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

(2) Authorized employee. A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this part.

(3) Capable of being locked out. An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

(4) Energized. Connected to an energy source or containing residual or stored energy.

(5) Energy isolating device. A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches, and other control circuit type devices are not energy isolating devices.

(6) Energy source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy, including gravity.

(7) Hot tap. A procedure used in the repair, maintenance, and services activities which involves welding on a piece of equipment (pipelines, vessels, or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

(8) Lockout. The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

(9) Lockout device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevents the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

(10) Normal production operations. The utilization of a machine or equipment to perform its intended production function.

(11) Servicing and/or maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning, or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

(12) Setting up. Any work performed to prepare a machine or equipment to perform its normal production operation.

(13) Tagout. The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

(14) Tagout device. A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-24-11003, filed 9/22/93, effective 11/1/93. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11003, filed 10/30/92, effective 12/08/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11003, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11003, filed 10/1/90, effective 11/15/90.]

## Chapter 296-30 WAC
## RULES FOR THE ADMINISTRATION OF THE CRIME VICTIM COMPENSATION PROGRAM

WAC



**WAC 296-30-010 Definitions.** Whenever used in these rules, the following words mean:

(1) "Innocent victim" means any person whose injury was not the direct, proximate result of his or her consenting to, provoking, or inciting the criminal act that resulted in the injury.

(2) "Bodily injury" means any harmful or offensive touching, and includes severe emotional distress where no touching takes place when:

(a) Claimant is not the object of the criminal act and:

(i) The distress is intentionally or recklessly inflicted; and

(ii) The distress is inflicted by extreme or outrageous conduct; and

(iii) The claimant has a reasonable apprehension of imminent bodily harm; and

(iv) The claimant is in the immediate vicinity of the criminal act at the time the criminal act takes place.

(b) Claimant is the victim of the criminal act and:

(i) The distress is intentionally inflicted; and

(ii) The distress is inflicted by outrageous or extreme conduct; and

(iii) The claimant had a reasonable apprehension of imminent bodily harm.

(3) "Private insurance" means sources of recompense available by contract, such as life or disability insurance.

(4) "Public insurance" means any state or federal statutory welfare and insurance plan that compensates victims or their beneficiaries as a result of the claimed injury or death. This does not include state, federal, or private deferred income retirement plans.

(5) The test used to define "the result of" as used in RCW 7.68.070 (3)(a) is two pronged. First, it must be determined that cause in fact exists, and second, it must then be determined that proximate cause exists.

(a) Cause in fact exists if "but for" the acts of the victim the crime that produced the injury would not have occurred.

(b) Proximate cause exists if, once cause in fact is found, it is determined that the acts of the victim:

(i) Resulted in a foreseeable injury to the victim;

(ii) Played a substantial role in the injury; and

(iii) Were the direct cause of the injury.

(6) "Institutions maintained and operated by department of social and health services or the department of corrections" means those institutions in which the department of social and health services or the department of corrections assumes responsibility for medical coverage of the institution's residents.

(7) "Reasonable cooperation" generally exists when the claimant is:

(a) Willing to talk to police and give information to aid in the investigation; and

(b) Willing to assist in the prosecution of the alleged criminal.

(8) A person is "unjustly enriched" within the meaning of RCW 7.68.070(15) when it would be deficient in justice and fairness, or inequitable, to allow that person to obtain, or have control of or access to, benefits or compensation paid as a result of an injury to a victim of crime.

(9) "Department" means the department of labor and industries.

(10) "Services provided" means services covered under chapter 74.09 RCW or Title XIX of the Federal Social Security Act that are: (a) Provided by health services providers with credentials recognized by the department for purposes of payment under chapter 51.36 or 7.68 RCW; and (b) available and equivalent to those services covered by the department under Title 51 or chapter 7.68 RCW.

[Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-010, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 7.68.030, 7.68.070 (12) and (16) and 51.04.030. 89-23-004, § 296-30-010, filed 11/3/89, effective 11/10/89. Statutory Authority: Chapter 7.68 RCW. 86-01-028 (Order 85-37), § 296-30-010, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-010, filed 1/15/85.]

**WAC 296-30-020 Vehicular assault.** Chapter 7.68 RCW shall cover those people killed or injured as a result of a vehicular assault that occurred after July 24, 1983 if there has been a conviction for the vehicular assault. Eligibility occurs when the claimant's injury results in the assailant's conviction for vehicular assault, or when the claimant's injury is a direct result of the collision that led to the vehicular assault conviction. The claimant's injury need not be the one that led to the conviction.

[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 296-30-050 Distribution of third party recoveries.** (1) Before July, 1977. Any claimant who receives crime victim's benefits is required to reimburse fully the department for all benefits paid to the claimant under chapter 7.68 RCW if the claimant recovers damages from the person or persons who committed the criminal act. The reimbursement is limited to the amount recovered by the victim.

(2) After July, 1977 and before April 1, 1980. Any claimant who receives crime victim's benefits is required to reimburse fully the department for all benefits paid to the claimant under chapter 7.68 RCW if the claimant recovers damages from any liable party. The reimbursement is limited to that amount recovered by the victim.

(3) An injury or death that occurred on or after April 1, 1980, for which recovery was made before July 24, 1983. This amendment incorporated the industrial insurance third party recovery statutes RCW 51.24.050 through 51.24.100 into chapter 7.68 RCW. The amendment changed the department's entitlement to reimbursement. For those victims injured or killed on or after April 1, 1980, and for which any recovery was made before July 24, 1983, disbursement of an award or settlement is as follows:

(a) Reasonable attorney's fees.

(b) Victim receives 25% of the balance.

(c) The department shall receive the balance to the extent necessary to reimburse the department for benefits paid.

(d) Any remaining balance is paid to the victim.

(e) If any remaining balance is paid to the victim, no further crime victim benefits will be paid to the victim until the amount of benefits she or he continued to be eligible for equals the remaining balance paid at the time of settlement or award.

(4) Recoveries made on or after July 24, 1983, and before July 1, 1993. This subsection applies to all claimants who receive an award or settlement from a liable third party on or after July 24, 1983, and before July 1, 1993. These awards shall be disbursed as follows:

(a) Costs and reasonable attorney's fees paid proportionately by the victim and the department.

(b) Victim then receives 25% of the balance.

(c) Department receives the balance to the extent necessary to reimburse the department for its lien minus its share of attorney's fees.

(d) Any remaining balance goes to the victim.

(e) The department may compromise its lien for injuries that were sustained on or after April 1, 1980.

(5) Steps for determining proportionate attorney's fees:

(a) Determine the amount of the settlement or award obtained by the claimant.

(b) Determine attorney's fees and costs.

(c) For an open claim, determine the amount of the department's lien at the time of settlement or award. If the claim is closed at the time of the recovery, determine the claimant's full entitlement from the department.

(6) Calculate what percent of the total recovery equals the department's lien for open cases, and the claimant's entitlement for closed claims. This percent is the department's proportionate share.

| | | |
|---|---|---|
| Ex. in a nondeficiency judgment | | |
| $ | 1,000 | Gross recovery |
| $ | 200 | Attorney fees |
| $ | 100 | Entitlement or claim costs |
| $ | 20 | Department's proportionate share of attorney's fees and costs. The $100 claim costs equals 10% of the total recovery. Thus, the department's proportionate share of attorney's fees are equal to 10% of $200 or $20 |
| Ex. in deficiency judgments/recoveries | | |
| $ | 1,000 | Gross recovery |
| $ | 200 | Attorney fees |
| $ | 2,000 | Claim costs |
| $ | 1,000 | |
| $ | -200 | Attorney fees |
| $ | 800 | Claimant receives 25% of this figure = 200 |
| $ | -200 | Claimant 25% share |
| $ | 600 | Balance remaining goes to the department and is used to determine if settlement/ judgment is deficient. If this balance is deficient, as it is here, this figure is used to calculate the department's proportionate share of attorney's fees and costs. |
| | 60% | Department percent of attorney fees ($6.00 = 60% of $1,000 recovery) |
| $ | 120 | Department's share of attorney fees |
| $ | +200 | Claimant's 25% share |
| $ | 320 | Claimant's total recovery |
| $ | 600 | Balance |
| $ | -120 | Attorney fees, department |
| $ | 480 | Department's recovery |

(7) Once the claim is closed, the department shall reexamine its proportionate share. If the claimant's final entitlement is greater than the amount of the department's lien at the time of recovery, the department shall reimburse the claimant for the department's increased percentage of the attorney's fees and costs.

| | | |
|---|---|---|
| Ex.: | $ 1,000 | Recovery. |
| | $ 200 | Attorney's fees and costs. |
| | $ 100 | Department's lien at time of recovery. |
| | $ 20 | Attorney's fees and costs paid at time of recovery. |
| | $ 500 | Claimant's total entitlement (50% of total recovery). |
| | $ 100 | Department's full proportionate share of attorney's fees and costs (50%, that amount determined by the claimant's entitlement). |
| | $ 80 | The amount that the department must reimburse the claimant for attorney's fees and costs. |

(8) Recoveries made on or after July 1, 1993, shall be governed by the provisions of RCW 51.24.060.

[Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-050, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-050, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-050, filed 1/15/85.]

**WAC 296-30-060 Requirement to report criminal acts.** (1) The following are examples under which the twelve-month reporting requirement in RCW 7.68.060 (1)(b) may be tolled:

(a) Unconsciousness or coma of victim.

(b) Youth of victim (because of age the victim is unaware that a crime has been committed against her).

(c) Rape trauma syndrome.

(d) A report of an assault against a child made to children's protective services when the report is made within twelve months of when it reasonably could have been made.

(2) This list is not and should not be considered exhaustive but is for illustrative purposes.

[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 296-30-080 Counseling for sexual assault.** (1) Pursuant to RCW 7.68.070(12), the department shall pay for counseling for victims of sexual assault and, when appropriate, for members of a victim's immediate family. An immediate family member shall be defined as the victim's parents, spouse, child(ren), siblings, grandparents, and those members of the same household who have assumed the rights and duties commonly associated with a family and who hold themselves out as a family unit.

(2) Counseling for the above defined family members is appropriate when:

(a) The counseling is for the spouse, child, parent, or sibling of the victim who suffers psychological trauma as a result of the sexual assault; or

(b) The family member and victim live in the same household and the family member suffers psychological trauma as a result of the sexual assault; or

(c) The family member sees the assault; or

(d) Counseling of the family member will aid in the victim's recovery.

[Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-080, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-080, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-080, 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 Mental Health Treatment Rules and Fees*, less any available benefits of public or private collateral resources, except as follows:

The percentage of allowed charges authorized by WAC 296-23A-105: Payment for hospital inpatient and outpatient services, WAC 296-23A-155: New hospitals, WAC 296-23A-160(3): Excluded and included services, and WAC 296-23A-165: Out-of-state hospitals shall be equal to the percentage of allowed charges established by the department of social and health services under Title 74 RCW and WAC 388-87-070(6): Payment hospital inpatient services.

If any of the maximum allowable fees in the publications entitled *Medical Aid Rules and Fee Schedules and Crime Victims Compensation 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.

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 that are in excess of the amounts that the victim is entitled to from public or private insurers, and bill the department for services rendered at fee schedule rates if such rates are in excess of the public or private insurance entitlements.

[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.]

**WAC 296-30-130 Lump sum benefits.** (1) Lump sum benefits paid to the survivor(s) of an unemployed victim shall be paid on a monthly basis if the survivor(s) is entitled to private or public death benefits. The death benefit payments shall be deducted each month from the crime victim's death benefits. Crime victim's benefit payments shall continue until the combined public or private death benefits and the crime victim's death benefits equal the total amount that the survivor(s) is eligible for under chapter 7.68 RCW.

(2) The amount of the monthly payments is based on the state's average monthly wage and are determined by the percentages established in RCW 51.32.050.

(3) This lump sum payment shall be adjusted upward by a factor of 8% to reflect the present and future value of the money.

(4) The survivor(s) of an employed victim are entitled to the maximum in death benefits prescribed by RCW 7.68.070(13). These benefits shall be paid in the same manner as the benefits paid to the survivor(s) of an unemployed victim except that the monthly rate shall be determined by the deceased's regular rate of pay.

(5) This procedure was adopted to ensure equal treatment of survivor(s) in like circumstances.

[Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-130, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-130, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-130, filed 1/15/85.]

## Chapter 296-31 WAC
## CRIME VICTIMS COMPENSATION MENTAL HEALTH TREATMENT RULES AND FEES

WAC



### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-31-095 Consultation fees. [Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-095, filed 11/13/92, effective 12/14/92.] Repealed by 94-02-015, filed 12/23/93, effective 1/24/94. Statutory Authority: Chapter 7.68 RCW.

**WAC 296-31-020 Definitions.** This section explains the department's definitions of terms used throughout the sections as they apply to claimants.

**Acceptance, accepted condition**: Determination, in writing, by a qualified representative of the department, that reimbursement for the diagnosis and rehabilitative treatment of a claimant's mental health condition are the responsibility of the department. The condition being accepted must be specified by one or more diagnostic codes from the current edition of the International Classification of Diseases, Clinically Modified (ICD-CM), or by DSM III-R, and by use of words to describe the symptoms connected to or citing ICD-CM or DSM III-R diseases.

**Authorization**: Notification, in writing or by telephone, by a qualified representative of the department, that specific necessary treatment, services, or equipment recommended by a provider for the diagnosis or rehabilitative treatment of an accepted condition will be reimbursed by the department. Providers must insure they maintain records indicating the name of the qualified representative who authorizes treatment or equipment.

**Claimant**: A person who submits, or on whose behalf is submitted, an application for benefits under the Crime Victims Act.

**Consultation:** The services rendered by a mental health provider whose opinion or advice is requested by the attending (treating) mental health provider, or agency, or by the department in the evaluation and/or treatment of a claimant. Case management or case staffing does not

constitute a consultation. Treatment of a claimant is not a consultation.

**Crisis intervention**: Therapy to alleviate the most pressing problems and attempt to use the crisis as an opportunity for positive change; the vital mental and safety functions of the client are stabilized by providing support, structure and, if necessary, restraint.

**Disability awards for mental health conditions**: Direct monetary compensation that may be provided to an eligible claimant who is either totally temporarily disabled, permanently partially disabled, or totally permanently disabled resulting from an accepted condition. Under Washington law, permanent disability awards are based solely on mental impairment due to the accepted injury or conditions without consideration of economic factors. Disability rating exams must be provided by a physician.

**Elective nonemergent hospital admission**: Placement of the claimant in an acute care hospital or residential treatment facility for mental health treatment of a claim related mental health condition which may be safely scheduled in advance without jeopardizing the claimant's health or treatment outcome.

**Emergent hospital admission**: Placement of the claimant in an acute care hospital, psychiatric hospital, or, residential treatment facility for treatment of a claim related mental health condition of an unforeseen or rapidly progressing nature which, if not treated in an inpatient setting, is likely to jeopardize the claimant's health or treatment outcome.

**Family therapy**: Therapy involving the therapist, and one or more members of the claimant's family (excluding the perpetrator if also a family member) and which centers on issues resulting from the claimant's assault.

**Group therapy**: Therapy involving the claimant, the therapist, and one or more clients who are not related to the claimant and which includes issues both related to the claimant's assault and pertinent to other group members, not necessarily related to the claimant's assault.

**Homicide survivor**: An immediate family member of a homicide victim as the result of a criminal act committed on or after July 1, 1992. Homicide survivors may receive appropriate counseling to assist them with the immediate, near term consequences of the related effects of the homicide.

**Immediate family members**: Any claimant's parents, spouse, child(ren), siblings, grandparents, and those members of the same household who have assumed the rights and duties commonly associated with a family and who hold themselves out as a family unit.

**Individual therapy**: Therapy provided on a one to one basis between a therapist and claimant.

**Mental health services provider**: Any person, firm, corporation, partnership, association, agency, institution, or other entity providing any kind of mental health services related to the treatment of a claimant. This includes, but is not limited to, hospitals, psychiatrists, psychologists, advanced registered nurse practitioners with a specialty in psychiatric and mental health nursing, registered and/or certified master level counselors, and other qualified service providers licensed, registered and/or certified with the department of health and registered with the crime victims program. (Refer to WAC 296-31-030 for specific details.)

**Modified work status**: When the claimant is not able to return to previous work, but is capable of carrying out work of a lighter, or otherwise different nature.

**Necessary treatment**: Those health services or treatments which, in the opinion of the director or his or her designee are:

Proper and necessary for the diagnosis or rehabilitative treatment of an accepted condition;

Reflective of accepted standards of good practice within the scope of the provider's license, certification, or registration;

Not delivered primarily for the convenience of the claimant, the claimant's attending provider, or any other provider; and

Provided at the least cost and in the least intensive setting of care consistent with accepted standards of care/accepted therapeutic practice and with the other provisions of this definition. Services which are inappropriate to the accepted condition, or which present hazards in excess of the expected mental health benefits, are not considered necessary. Services which are obsolete are not authorized. Services which are controversial, experimental, or investigational are presumed not to be consistent with accepted standards of care and shall only be authorized on an individual case basis with written authorization for the service from the department.

**Office notes**: Written records of treatment, or other work products, documenting specific charges billed, as opposed to reports of evaluation and progress independently submitted to the department or to other parties.

**Permanent partial disability**: Providers are required to notify the department of any claimant's accepted condition where permanent functional impairment or loss is indicated after maximum rehabilitation has been achieved, which is determined to be stable and fixed at the time the evaluation is made. The department will arrange to have impairments rated using the category system under WAC 296-20-200 et al.

**Regular work status**: When the injured claimant is capable of returning to his/her regular work, the attending provider must notify the claimant and the department of the specific date of release to return to regular work. Time loss compensation will be terminated on the release date. Further treatment may be allowed as requested by the attending provider if the condition is not stable or fixed and treatment is needed for the accepted condition.

**Repressed memory**: A condition of not having or had conscious memory of an act. For the purpose of these rules describing this condition under this section the definition means that a claimant regained conscious memory of victimization caused by a criminal act committed against them as a minor.

**Temporary partial disability**: Partial time loss may be paid when the claimant can return to work on a limited basis, or, return to a lesser paying job is necessitated by the accepted condition. However, the claimant must have a reduction in wages of at least five percent before loss of earning power can be paid.

**Termination of treatment**: When treatment is no longer required because the accepted condition for which the claim was allowed has become stable, the provider must submit a report indicating the date the condition became

stable to the department. This is necessary to initiate closure of the crime victim's compensation claim.

**Time loss certification**: Certification from a physician based upon findings which are specific symptoms that an accepted condition of a claimant either partially or totally incapacitates the claimant from returning to work. Such symptoms may include, but are not limited to: Anxiety, depression, loss of appetite, weight loss, flat affect, inability to concentrate, inability to complete tasks. The department requires that all claims for time loss compensation must be certified by a physician.

**Total permanent disability**: A condition permanently incapacitating a claimant from performing any work at any gainful occupation.

**Total temporary disability** (time loss): The claimant is temporarily unable to return to any type of reasonably continuous gainful employment as a direct result of an accepted condition. Time loss compensation will be paid if the victim was employed on the date of their criminal injury, or, if not, if the victim was employed three or more consecutive months during the twelve months immediately preceding the date of the assault.

**Utilization review**: The assessment of a claimant's mental health care for assurance that it is necessary and of good quality. Assessments typically consider 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.

**Victim**: A person who suffers bodily injury or death as the proximate result of a criminal act of another person, the claimant's own good faith and reasonable effort to prevent a criminal act, or his or her good faith effort to apprehend a person reasonably suspected of engaging in a criminal act. For the purposes of receiving benefits, "victim" is interchangeable with "employee" or "worker" as defined in the Industrial Insurance Act. For the purpose of these rules "bodily injury" means any harmful or offensive touching, and includes severe emotional distress where no touching takes place as defined and under the conditions outlined in WAC 296-30-010(2).

[Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-31-020, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-020, filed 11/13/92, effective 12/14/92.]

**WAC 296-31-060 Reporting requirements.** The department may require reports at any time as is necessary in order to determine initial or continued authorization of benefits or services. However, the department requires the following reports at various stages of a claim in order to authorize mental health treatment or services, time loss compensation, and bill payments for innocent victims of crime:

(1) **Initial report of injury**: To establish a claim, an application for benefits must be completed and submitted to the department. The provider may bill under code 90001 for the filing of the application. In addition, the examination or assessment charge may be billed. Reimbursement of these services will be paid if the claim is allowed by the department. Billing for an extended or comprehensive visit of more than one hour may require submission of additional reports.

(2) **Initial evaluation report**: This report may be submitted with the application for benefits by either the provider or claimant, or no later than thirty days from the date of first treatment. The report must include the preliminary diagnosis and symptoms, proposed treatment plan and treatment goals, and expected length of treatment. It must also include a diagnosis of any preexisting conditions and their potential effect on the condition resulting from the assault. Any change in session frequency from that stated in this report will require authorization.

(3) **Office notes and follow-up visits**: Legible copies of office or progress notes or other work products may be, as determined by the department, required documentation to substantiate all follow-up visits or treatment following the initial evaluation. Office notes are not acceptable in lieu of requested narrative reports.

(4) **Ninety-day narrative reports**: When treatment is to continue beyond ninety days from the first date of treatment, submission of a narrative report is required every ninety days to substantiate the need for continued care. A narrative report must contain the basic information outlined in these rules. A narrative report should be billed under code 99080 and described as a ninety-day report. Treatment in excess of ninety days may be authorized by the department only after receipt and review of the ninety-day narrative report. Absence of a response from the department to a report shall constitute authorization for continued treatment. When treatment beyond ninety days will not be authorized or is authorized with limits on frequency or provider type, notification will be sent by the department giving a thirty-day transition period. In the case of a contested decision, a claimant or a provider may file a written protest to the department or appeal to the board of industrial insurance appeals. The information required for the narrative report is contained under WAC 296-31-090.

(5) **Hospital reports**: When the claimant is hospitalized, it is the responsibility of the attending mental health provider to submit his or her reports to the hospital for submission with the hospital billing. The attending mental health provider may bill for hospital visits without attaching copies of the reports.

(6) **Consultation reports**: To substantiate treatment of more than one hundred eighty days, a consultation with a consultant chosen by the attending mental health provider is required. The department may require the claimant to be examined by the consultant as part of the consultation process with supervisory approval. Although no prior authorization is required for such consultations, the department must be notified when such consultation is arranged. The consultant is responsible for submitting a copy of the report as outlined in these rules within fifteen days from the date of the consultation. Treatment may only be authorized to extend beyond one hundred eighty days in mental health cases after the department has received this report. Absence of response, by the department upon receipt of the report shall constitute authorization for additional treatment. When extended treatment will not be authorized or will be terminated, notification will be sent by the department giving a thirty-day transition period. See WAC 296-20-01002 for consultation report requirements.

(7) **Ninety-day follow-up reports**: Following the one hundred eighty-day report and consultation, additional narrative reports are still required at ninety-day intervals. The department may request additional consultations and/or independent assessments as warranted by the individual case.

(8) **Termination reports**: When a mental health practitioner discontinues treatment of a claimant because the condition for which treatment was provided is fixed and stable or for any other reason, a termination report shall be completed and provided to the program within sixty days of the last visit.

(9) **Reopening application**: On claims closed over sixty days, the department will pay for completion of a reopening application (Code 90097), an office visit and diagnostic studies necessary to complete the application, (see WAC 296-20-01002). No other benefits will be paid until the adjudication decision is rendered.

[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 Ongoing treatment.** (1) Cases that remain open more than one hundred eighty days: When the claimant requires treatment beyond one hundred eighty days, a consult with another mental health provider is necessary to determine and/or establish the need for continued treatment and/or payment of time-loss compensation. This may be accomplished by the attending mental health provider in consultation with a provider who also satisfies the department requirements. A detailed consultation report must be provided to the department.

Three levels of consultation are recognized: Limited, extensive and complex. Detailed descriptions of each type of consultation are included in the publication entitled *Crime Victims Compensation Mental Health Treatment Rules and Fees*.

(2) Procedures and/or continued treatment requiring consultation: In the event of complication, controversy, or dispute over the treatment aspects of any claim, the department will not authorize continued treatment until the complication, controversy, or dispute has been resolved and the department has received notification of any findings and reviewed any recommendations.

(a) The department may consider claims as complicated, controversial or disputed when involving treatment or conditions as follows:

(i) All individual counseling or psychotherapy, pertaining to immediate family members, requiring treatment sessions of more than twelve visits.

(ii) All family therapy visits, not including the claimant, requiring more than twelve visits.

(iii) All conditions not related to the accepted condition involving emotional, psychiatric, or social problems which are likely to complicate recovery.

(iv) All therapeutic procedures of a controversial nature or type not in common use for the specific condition.

(v) Cases where there are complications or unfavorable circumstances such as age, preexisting conditions, or, because of occupational requirements, etc.

(vi) Elective nonemergent hospital admission.

(vii) Any other circumstance that the department may define.

(b) The department may resolve issues of claim complication, controversy, or dispute using consultants, independent assessments and/or requesting a review of policies or procedures by the department's mental health advisory committee. The committee may recommend courses of action to resolve these issues to including, but not limited to, recommendation of an independent assessment.

(c) In cases presenting diagnostic or therapeutic problems difficult to resolve to the attending mental health provider (psychiatrist, psychologist and/or counselor), consultation with a specialist will be allowed without prior authorization. The consultant must submit his or her findings and recommendations immediately to the attending provider and the department. See WAC 296-31-095 and 296-20-035 for report contents and requirements.

(i) Whenever possible, the referring mental health provider should make his or her records available to the consultant to avoid unnecessary duplication. Consultants may proceed with indicated and reasonable diagnostic studies as permitted within their scope of practice.

(ii) Consultations must be held within the local geographic area of the claimant's residence, if possible, and with a consultant not having a mutual proprietary or business interest with the attending mental health provider. Exceptions to this requirement may be made only with department preauthorization. The department does not prohibit the use of members of the same professional or social associations.

(iii) The mental health provider will not arrange a consultation if notification has been received that an independent assessment is being arranged by the department. If a recent consultation has been completed and the attending mental health provider is notified that the department is arranging an assessment, the department must be advised immediately of the consultation.

(iv) The consultation fee will be paid only if a consultation report is complete (see WAC 296-20-035) and contains all psychological findings as well as all pertinent negative or normal findings. The report must be received in the department within fifteen days from the date of the consultation. No fee may be paid to the consultant, by the department, if the claimant misses/fails to attend the appointment. However, the claimant may be billed directly.

(v) The consultant may not order, prescribe, or provide treatment without the consent of the claimant. No transfer will be made to the consultant without the written request of the claimant.

(3) Concurrent treatment: In some cases, treatment by more than one provider may be allowed. The department will consider authorization of concurrent treatment when the accepted condition requires specialty or multidisciplinary care. When requesting consideration of concurrent treatment, the attending mental health provider must provide the department with the following: The name, address, discipline, and specialty of all other providers requested to assist in the treatment of the claimant and an outline of their responsibility in the case and an estimate of the length of the period of concurrent care. When concurrent care is allowed, the department will recognize one primary attending mental health provider, who will be responsible for directing the over-all treatment program; providing copies of all reports

and other data received from the involved providers and, in time loss cases, providing the adequate certification evidence of the claimant's inability to work. The department will approve concurrent care on an individual case basis.

(4) Transfer of attending provider: All transfers from one provider to another must be approved by the department. Normally transfers will be allowed only after the claimant has been under the care of the attending mental health provider for sufficient time for the provider to: Complete the necessary diagnostic studies, establish an appropriate treatment regimen, and evaluate the efficacy of the therapeutic program. Under RCW 51.36.010 claimants are entitled to free choice of attending provider subject to the limitations of RCW 7.68.130. Except as provided under (a) through (g) of this subsection, no reasonable request for transfer will be denied. The claimant must be advised when and why a transfer is denied. The department reserves the right to require a claimant to select another provider for treatment, under the following conditions:

(a) When more conveniently located providers, qualified to provide the necessary treatment, are available.

(b) When the attending provider fails to cooperate in observance and compliance with the department rules.

(c) In time loss cases where reasonable progress towards return to work is not shown.

(d) Cases requiring specialized treatment, which the attending provider's authority is not qualified to render, or is outside the scope of the attending provider's authority to practice.

(e) Where the department finds a transfer of provider to be appropriate and has requested the claimant to transfer in accordance with this rule, the department may select a new attending provider if the claimant unreasonably refuses or delays in selecting another attending provider.

(f) In cases where the attending provider is not qualified to treat each of several accepted conditions. This does not preclude concurrent care where indicated.

(g) No transfer will be approved to a consultant without the written request of the claimant. Transfers will be authorized for the foregoing reasons or where the department in its discretion finds that a transfer is in the best interest of returning the claimant to a productive role in society.

[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 296-31-080 Billing procedures.** (1) All services rendered must be in accordance with these mental health treatment rules. The department may reject bills for services rendered in violation of these rules. The claimant may not be billed for services rendered in violation of these rules. However, claimants may be billed if they fail to keep or miss a properly scheduled appointment.

(a) Bills must be itemized on department forms or other forms which have been approved by the department. Physicians, advanced registered nurse practitioners, psychologists, and masters level mental health counselors may use the National Standard HCFA 1500 Health Insurance Claim Form or the department's statement for crime victim services. When billing for treatment of a family member other than the claimant, you must identify the family member by name and relationship to the claimant. Hospitals use the UB-92 billing form for institution services and the National Standard HCFA 1500 Health Insurance Claim Form for professional services.

(b) Bills must specify the date and type of service, the appropriate procedure code, the condition treated, and the charges for each service.

(c) Every bill submitted to the department must be completed to include the following:

(i) Claimant's name and address;

(ii) Claimant's claim number;

(iii) Date of injury;

(iv) Referring provider's name;

(v) Dates of service;

(vi) Place of service;

(vii) Type of service;

(A) Psychiatrists and psychologists use type of service 3.

(B) Master level counselors use type of service M.

(C) Advanced registered nurse practitioners (ARNP) use type of service N.

(viii) Appropriate procedure code or hospital revenue code,

(ix) Description of service; if mental health patient is not the claimant, give name and relationship to the claimant;

(x) Charge;

(xi) Units of service;

(xii) Total bill charge;

(xiii) Provider of service;

(xiv) Group, clinic, center, or facility name;

(xv) Billing address;

(xvi) Federal tax information;

(A) Federal tax identification number; or

(B) Social Security number.

(xvii) Date of billing;

(xviii) Submission of supporting documentation required under (f) of this subsection;

(xix) Private or public insurance eligibility and amounts paid.

(d) Responsibility for the completeness and accuracy of the description of services and charges billed rests with the provider rendering the service, regardless of who actually completes the bill form.

(e) Providers are urged to bill on a monthly basis. 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.

(f) The following supporting documentation must be maintained and submitted when billing for services, as may be appropriate:

(i) Intake evaluation;

(ii) Progress reports;

(iii) Consultation reports;

(iv) Special or diagnostic study reports;

(v) Independent assessment or closing exam reports;

(vi) For BR procedures - see WAC 296-31-090 for requirements;

(vii) Claimant public or private insurance information.

(g) The claim number must be placed in the upper right hand corner on each bill and on each page of reports and other correspondence.

(h) Rebills. If a provider does not receive payment or notification from the department within ninety days, services may be rebilled. Rebills must be submitted for services denied if a claim is closed or rejected and subsequently reopened or allowed. Rebills should be identical to the original bill: Same charges, codes, and billing date. The statement "rebill" must appear on the bill.

(i) Any inquiries regarding adjustment of charges must be submitted within ninety days from the date of payment to be considered.

(j) Any denied charge may be protested in writing to the department or appealed to the board of industrial insurance appeals.

(2) Allowance and payment for medication. The department will pay for medications or supplies dispensed for the treatment of conditions resulting from a crime victim injury and/or conditions which are retarding the recovery from the claimant's condition, for which the department has accepted temporary responsibility. Specific information governing allowance and payment for medication is contained in WAC 296-20-17001.

(3) Payment of out-of-state providers.

(a) Providers of mental health services in the bordering states of Oregon and Idaho shall bill and be paid according to Washington state rules.

(b) Providers of health services in other states and other countries shall be paid at rates which take into account:

(i) Payment levels allowed under the state of Washington crime victims compensation program rules;

(ii) Payment levels allowed under crime victims compensation or workers compensation programs in the state of the provider's place of business; and

(iii) The usual, customary, and reasonable charges in the state and city of the provider's place of business.

(c) In all cases these payment levels are the maximum allowed to providers of services to claimants. Should a provider's charge exceed the payment amount allowed under the state of Washington crime victim compensation program rules, the provider is prohibited from charging the claimant for the difference between the provider's charge and the allowable rate. Providers violating this provision are ineligible to treat claimants as provided by these mental health rules and are subject to other applicable penalties.

(d) Only those diagnostic and treatment services authorized under the state of Washington mental health rules may be allowed by the department. As determined by the department, the scope of practice of providers in bordering states may be recognized for payment purposes, except that in all cases WAC 296-20-03002 (treatment not authorized) shall apply. Specifically, services permitted under crime victims compensation programs in the provider's place of business, but which are not allowed chapters 296-20, 296-30, and 296-31 WAC of the state of Washington, may not be reimbursed. When in doubt, the provider should verify coverage of a service with the department.

(e) Out-of-state hospitals will be paid according to WAC 296-30-081.

[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 296-31-090 Mental health fees.** (1) Rules and billing procedures are presented in detail in the previous sections, some commonalities are repeated here for the convenience of mental health providers referring to the mental health fee section. Definitions and items unique to billing procedures and fees are also included.

Psychiatric care may be billed without time dimensions according to the procedure or service as are medical or surgical procedures. In billing psychotherapy procedures, time is only one aspect and may be expressed as is customary in the local area. For example, the usual appointment length of an individual psychotherapy procedure may be signified by the procedure code alone. The modifier '-52' may be used to signify a service that is reduced or less extensive than the usual procedure. The modifier '-22' may be used to indicate a more extensive service. For example procedure code 90801 may be billed with modifier '-22' if the evaluation and report writing take more than an hour to complete. Thus, psychotherapy procedures may be reported by the procedure code alone or by the procedure code with a modifier.

Facility charges are not payable when a provider elects to use hospital facilities or other outpatient facilities in lieu of maintaining a private practice office.

(2) Definitions.

**By report** - BR (by report) in the value column indicates that the value of this 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 are too unusual, variable, or complex to be assigned a relative value unit, using any of the following as indicated:

(a) Diagnosis - ICD9 - DSM III.

(b) Whenever possible, list the nearest similar procedure by number according to this schedule.

The department may adjust BR procedures when such action is indicated.

**Maximum fees** - The maximum allowable fee for a procedure is the fee contained in the publication entitled *Crime Victims Compensation Mental Health Treatment Rules and Fees*. 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 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

No fee is payable by the department for missed appointments unless the appointment is for an examination arranged by the department. Claimants may be billed directly for missed or "no show" appointments.

**Mental health modifiers** - Listed values for most procedures may be modified under certain circumstances. When applicable, the modifying circumstance should be identified by the addition of the appropriate "modifier code number" after the usual procedure number. The value should be listed as a single modified total for the procedure.

**Report required** - The values for procedures for which a report is required include the report fee. **Do not bill separately for these reports.**

**Unusual or unlisted procedure** - Value of unlisted services or procedures should be substantiated "by report" (BR). Refer to the definition of **By report** for reporting requirements.

(3) Advanced registered nurse practitioners are reimbursed at ninety percent of values listed for psychologists or psychiatrists.

(4) Mental health services. The following graduated listing of services is an attempt to reflect the relative values of the time and skills required at the various service levels. The listed values apply only when performed by mental health providers registered with and authorized by the department to provide services to claimants through this program.

| Modifier | Unit Value |
|---|---|
| -22 UNUSUAL SERVICES: When the services provided are greater than those usually required for the listed procedure, identify by adding this modifier to the usual procedure number. Requires written justification | BR |
| -52 REDUCED VALUES: Under certain circumstances, the listed value for a procedure is reduced or eliminated because of ground rules, common practice, or at the mental health provider's election. Under these or similar circumstances, the services provided can be identified by their usual procedure numbers and the use of a reduced value indicated by adding this modifier to the procedure number. (Use of this modifier provides a means of reporting services at a reduced charge without disturbing usual relative values.) | BR |
| -8N CONCURRENT CARE, SERVICES RENDERED BY MORE THAN ONE PROVIDER: When the claimant's condition requires the additional services of more than one provider, each provider may identify his or her services by adding this modifier to the service procedure code | BR |
| -96 SPECIAL AGREEMENT WITH CRIME VICTIMS COMPENSATION PROGRAM: This modifier is to be used by providers who have a special agreement with the crime victims compensation program for certain designated procedures. Any request for special agreement should be directed to:<br>Crime Victims Compensation Program<br>Special Claim Unit<br>PO Box 44523<br>Olympia WA 98504-4523 | |

THE VALUES FOR PROCEDURES FOR WHICH A REPORT IS REQUIRED INCLUDE THE REPORT FEE. DO NOT BILL SEPARATELY FOR THESE REPORTS.

[Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-31-090, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-090, filed 11/13/92, effective 12/14/92.]

**WAC 296-31-095 Repealed.** See Disposition Table at beginning of this chapter.

## Chapter 296-46 WAC
## SAFETY STANDARDS—INSTALLING ELECTRIC WIRES AND EQUIPMENT—ADMINISTRATIVE RULES

WAC



### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

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| 296-46-517 | Health care facilities. [Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 90-19-015, § 296-46-517, filed 9/10/90, effective 10/11/90.] Repealed by 93-06-072, filed 3/2/93, effective 4/2/93. Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. |
| 296-46-55001 | Mobile or manufactured homes. [Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 90-19-015, § 296-46-55001, filed 9/10/90, effective 10/11/90.] Repealed by 93-06-072, filed 3/2/93, effective 4/2/93. Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. |

**WAC 296-46-090 Foreword.** The 1993 edition of the National Electrical Code (NFPA 70 - 1993) including Appendix B, the 1990 edition of Centrifugal Fire Pumps (NFPA 20 - 1990) and the 1985 edition of Emergency and Standby Power Systems (NFPA 110 - 1985) 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.

[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 296-46-140 Plan review for educational, institutional or health care facilities and other buildings.** (1) All electrical plans for new or altered electrical installations in educational, institutional, and health or personal care occupancies classified or defined in WAC 296-46-130 and as indicated in WAC 296-46-150, Table 1 or 2 shall be reviewed and approved by the department before the electrical installation or alteration is begun. Plans for these electrical installations within cities that perform electrical inspections within their jurisdiction, and provide an electrical plan review program that equals or exceeds the department's program in plans examiner minimum qualifications, policies and procedures, may be submitted to that city for review rather than to the department. Approved plans shall be available on the job site for use during the electrical installation or alteration and for use by the electrical inspector. Refer plans for department review to the Electrical Inspection Section, Department of Labor and Industries, P.O. Box 44460, Olympia, Washington 98504-4460. Please refer to WAC 296-46-910 for required fees for plan review.

(2) Plans to be reviewed by the department must be legible, identify the name and classification of the facility, clearly indicate the scope and nature of the installation and the person or firm responsible for the electrical plans. The plans shall clearly show the electrical installation or alteration in floor plan view, include switchboard and/or panelboard schedules and when a service or feeder is to be installed or altered, shall include a riser diagram, load calculation, fault current calculation and interrupting rating of equipment. Where existing electrical systems are to supply additional loads, the plans shall include documentation that proves adequate capacity and ratings.

(3) Plan review for new or altered electrical installations of other types of construction may be voluntarily requested by the owner or other interested parties.

(4) For existing structures where additions or alternations to services are proposed, NEC Article 220 shall govern, except that, in addition to the provisions of Paragraph 220-35, the following alternative shall be considered acceptable for feeders:

If maximum demand data for one-year period is not available, other means of load measurement may be acceptable to establish demand on existing feeders. In any case, the following data are required:

(a) The date of the measurements.

(b) A diagram of the electrical system identifying the point(s) of measurement.

(c) Building demand measured continuously on the highest-loaded phase of the feeder over a thirty-day period, with demand peak clearly identified. (Peak demand shall be defined as the maximum average demand over a fifteen-minute interval.)

(d) Copies of thirty-day measurements, such as significant segments of chart recordings, or logs of readings from KW demand meters, adjusted for power factor. Copies of twelve-month service demand showing the highest demand for each month.

(e) The adjusted maximum annual demand in KVA, which shall include appropriate adjustments for seasonal loads, as shown by the twelve-month service demand. Also any occupancy adjustment that may be required and, any load changes which should be expected from planned changes in building use during the succeeding twelve months.

Plan submittal shall be accompanied by a written statement, stamped and signed by a registered professional engineer, attesting to the validity of these data.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-140, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-140, 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), § 296-46-140, filed 5/1/87. Statutory Authority: RCW 19.28.010 and 19.28.060. 84-15-051 (Order 84-10), § 296-46-140, filed 7/17/84. Statutory Authority: RCW 19.28.060. 81-06-037 (Order 81-5), § 296-46-140, filed 2/27/81, effective 4/1/81; 78-02-098 (Order 77-31), § 296-46-140, filed 1/31/78; Order 74-43, § 296-46-140, filed 12/19/74; Order 72-7, § 296-46-140, filed 6/7/72; Order 69-2, § 296-46-140, filed 2/28/69, effective 4/1/69.]

**WAC 296-46-150 Wiring methods for designated building occupancies.** Wiring methods, equipment and devices for health or personal care, educational and institutional facilities as defined or classified in WAC 296-46-130 and for places of assembly for one hundred or more persons shall comply with Table 1 or 2 and the notes thereto. For determining the occupant load of places of assembly, the methods of the currently adopted edition of the Uniform Building Code shall be used.

Table 1
Health or Personal Care Facilities
Electrical System—Wiring Methods

| Health or Personal Care Facility | Power, Lighting, or Class 1 Circuits | Patient Care Areas | Emergency Power, Lighting or Signalling | Low Voltage Systems | Special Requirements |
|---|---|---|---|---|---|
| Hospital | 3 | 2 | 2 | 6,7 | 4,5,10 |
| Nursing home | 3 | 2 | 2 | 6,7 | 4,10 |
| Boarding home | 3 | | 2 | 6,7 | 4,10 |
| Alcoholism hospital | 3 | 2 | 2 | 6,7 | 4,10 |
| Detoxification facilities | 3 | 2 | 2 | 6,7 | 4,10 |
| Psychiatric hospital | 3 | 2 | 2 | 6,7 | 4,5,10 |
| Alcoholism treatment facility (other than detoxification facility) | 3 | 3 | 2 | 6,7 | 4,10 |
| Maternity home | 3 | 2 | 2 | 7,8 | 4,10 |
| Birth or childbirth center | 3 | 2 | 2 | 7,8 | |
| Residential treatment facility for psychiatrically impaired children & youths | 3 | 2 | 2 | 6,7 | 4,5,10 |
| Medical, dental & chiropractic clinics | 3 | 2 | 2 | 7,8 | |
| Ambulatory surgeries & clinics | 3 | 2 | 2 | 7,8 | 10 |
| Freestanding Renal hemodialysis clinics | 3 | 2 | 2 | 7,8 | 10 |
| Adult residential treatment facility more than 16 persons | 3 | 2 | 2 | 6,7 | 5,10 |
| Adult residential treatment facility 16 persons or less | 3 | 2 | 2 | 7,8 | 4,10 |
| Group care facilities for children more than 16 persons | 3 | | 2 | 6,7 | 4,5,10 |
| Group care facilities for children 16 persons or less | 3 | | 2 | 7,8 | 4,5,10 |

General lighting load for the facilities in Table 1 shall be calculated at two watts per square foot or connected load if greater.

Table 2
Educational Facilities, Institutional Facilities, Places of Assembly for 100 or more persons or other facilities
Electrical System—Wiring Methods

| Facility | Power, Lighting or Class 1 Circuits | Emergency Power, Lighting | Low Voltage Systems | Special Requirements |
|---|---|---|---|---|
| Educational | 2,9 | 2 | 6,7 | 10 |
| Institutional | 2,9 | 2 | 6,7 | 10 |

| | | | | |
|---|---|---|---|---|
| Place of assembly for 100 or more persons | 3,9 | 2 | 6,7 | |
| Day care center for thirty or more children | 2,9 | 2 | 6,7 | 4,5,10 |
| Day care center licensed for less than thirty children | 3 | 2 | 7,8 | 4,5,10 |
| Licensed mini day care center | 3 | 2 | 7,8 | 4,5 |

Notes for Tables 1 and 2

. Not used.
2. Metallic raceways and MI cable, or MC and AC cables where the outer metal jacket is an approved grounding means of a listed cable and containing an insulated equipment grounding conductor of the proper ampacity.
3. Wiring methods in accordance with the National Electrical Code.
4. Ground-fault circuit-interrupter protection of 15 or 20 ampere, 125 volt receptacles within a bathroom or shower room or within five feet of a basin that is located in a patient room.
5. Tamper resistant receptacles in licensed day care facilities and pediatric or psychiatric patient care areas for 15 or 20 ampere, 125 volt receptacles. Tamper resistant receptacles shall, by construction, limit improper access to energized contacts.
6. Fire alarm, nurse call, public address systems used to give directions during an emergency situation or other emergency systems shall be installed in a metallic raceway.
7. Class 2 or 3 limited energy systems and communication systems including telephone, intercom, data processing or similar systems shall be permitted to be installed as open cable systems in compliance with the National Electrical Code.
8. Fire alarm systems shall be permitted to be installed as open cable systems in compliance with the National Electrical Code.
9. Rigid nonmetallic raceways shall be permitted to be installed outside of buildings, in the earth or in concrete on or below grade.
10. Plan review required.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-150, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-150, 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), § 296-46-150, filed 5/1/87. Statutory Authority: RCW 19.28.010 and 19.28.060. 84-15-051 (Order 84-10), § 296-46-150, filed 7/17/84. Statutory Authority: RCW 19.28.060. 81-06-037 (Order 81-5), § 296-46-150, filed 2/27/81, effective 4/1/81; 78-02-098 (Order 77-31), § 296-46-150, filed 1/31/78; Order 75-25, § 296-46-150, filed 8/4/75; Order 74-43, § 296-46-150, filed 12/19/74; Order 72-7, § 296-46-150, filed 6/7/72; Order 69-2, § 296-46-150, filed 2/28/69, effective 4/1/69.]

**WAC 296-46-21008 Branch circuits.** An individual branch circuit shall be provided for the receptacle outlet(s) for dwelling unit bathrooms as defined in the National Electrical Code. Whether one or more circuits are used, these circuits shall not supply other loads.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-21008, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-21008, filed 9/10/90, effective 10/11/90.]

**WAC 296-46-21052 Receptacles and switches.** (1) Receptacles and switches shall not be placed face-up on counter tops or at other locations where subject to moisture or debris entering the device.

(2) Where located out of traffic areas in dwelling units, formed or welded metal boxes that are mounted in a substantial manner such as directly to a framing member shall be permitted for floor receptacle outlets. An approved metal cover plate that provides protection from debris entering the device shall be used.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-21052, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-21052, filed 9/10/90, effective 10/11/90.]

**WAC 296-46-220 Branch circuit and feeder calculations.** (1) Where unfinished spaces adaptable to future dwelling unit living area are not readily accessible to the service or branch circuit panelboard, circuits shall be taken to the area and terminated in a suitable box. The box shall contain an identification of the intended purpose of the circuit(s). Adequate space and capacity shall be provided in the branch circuit panelboard serving the intended load.

(2) Occupancy lighting loads. In determining feeder and service entrance conductor sizes and equipment ratings, the currently adopted Washington state energy code unit lighting power allowance table and footnotes may be used in lieu of NEC Table 220-3 (b).

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-220, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-220, 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), § 296-46-220, filed 5/1/87. Statutory Authority: RCW 19.28.010 and 19.28.060. 84-15-051 (Order 84-10), § 296-46-220, filed 7/17/84. Statutory Authority: RCW 19.28.060. 78-02-098 (Order 77-31), § 296-46-220, filed 1/31/78; Order 72-7, § 296-46-220, filed 6/7/72; Order 69-2, § 296-46-220, filed 2/28/69, effective 4/1/69.]

**WAC 296-46-225 Outside branch circuits and feeders.** For the purpose of Article 225-8 (b) of the National Electrical Code, additional buildings or structures on the same property and under single management shall be supplied by a single branch circuit or feeder, unless the provisions of the exceptions to NEC Article 230-2 apply. If application of one of these exceptions allow additional supplies, a permanent plaque or directory shall be installed at each supply location denoting all other supplies to the building or structure and the location of each.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-225, filed 3/2/93, effective 4/2/93.]

**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 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: 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 296-46-23062 Service equipment.** (1) Service equipment, sub-panels, and similar electrical equipment shall be installed so that they are readily accessible and shall not be installed in bathrooms, clothes closets, shower rooms, cupboards, or attics, or above washers, clothes dryers, or plumbed-in fixtures. All indoor service equipment and subpanel equipment shall be adequately illuminated.

(2) Temporary construction service equipment shall not be used for other than construction purposes and shall be disconnected when the permanent service is connected unless an extension for a definite period of time is granted by the department.

(3) Equipment ground fault protection systems required by the National Electrical Code shall be tested prior to being placed into service to verify proper installation and operation of the system as determined by the manufacturer's published instructions. The test shall be performed by a firm that is approved by the department and has qualified personnel and proper equipment to perform the tests required.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-23062, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-23062, filed 9/10/90, effective 10/11/90.]

**WAC 296-46-316 Duct bank conductor ampacities.** (1) For the purpose of determining ampacities of conductors in underground duct bank installations where:

(a) The ducts maintain at least 7 1/2" on center spacing

(b) The loads served are calculated according to the provisions of the currently adopted edition of the NEC Article 220.

(c) Derating of conductors required by Note 8, to the aforementioned tables, shall still apply when the conductors within an individual duct exceeds three conductors.

The ampacities of insulated copper conductors 2,001 through 8,000 volts and ninety degrees C rated and installed in underground ducts containing not more than three conductors shall be as follows:

| SIZE AWG OR MCM | AMPACITY COPPER |
|---|---|
| 6 | 85 |
| 4 | 110 |
| 2 | 145 |
| 1 | 170 |
| 1/0 | 195 |
| 2/0 | 220 |
| 3/0 | 250 |
| 4/0 | 290 |
| 250 | 320 |
| 350 | 385 |
| 500 | 470 |
| 750 | 585 |
| 1,000 | 670 |

(2) It shall be permissible to determine the ampacities of conductors from the tables and accompanying notes in Appendix B of the National Electrical Code for applications covered directly by the tables.

(3) Underground conductors whose ampacity is determined from the National Electrical Code Table 310-16 shall be derated in accordance with Note 8 to Ampacity Tables of 0 to 2000 volts, where stacked or bundled (less than 2-inch spacing) a distance equal to 10 feet or 10 percent of the circuit length, whichever is less.

(4) All neutral conductors of 208/120 3 phase 4-wire wye system supplying electrical power to areas used for office occupancy shall be considered to be a current carrying conductor in accordance with Note 10 (c) to Tables 310 of the NEC.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-316, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-316, filed 9/10/90, effective 10/11/90. Statutory Authority: RCW 19.28.060. 88-15-063 (Order 88-14), § 296-46-316, filed 7/18/88. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 87-10-030 (Order 87-07), § 296-46-316, filed 5/1/87.]

**WAC 296-46-360 Amusement rides or structures, carnivals, circuses, and similar traveling shows.** (1) Electrical installations. Service equipment, separately derived systems, feeders and circuits for each amusement ride, structure or concession and the interconnection of each ride, structure or concession, shall comply with the National Electrical Code and this chapter.

(2) Feeders and circuits for portable rides, structures or concessions shall be listed and labeled, multiconductor cord of a type identified in Table 400-4 of the National Electrical

Code for hard usage or extra hard usage or as permitted under the conditions in this chapter, by individual, single conductor power cable. Ampacity shall be determined from the appropriate Table 400-5(A) or 400-5(B) in the National Electrical Code including all notes thereto.

(3) Flexible multiconductor cords shall be connected to equipment by approved connectors designed for the purpose or by listed cord caps. Individual conductors of multiconductor cords in sizes #2 AWG and larger shall be permitted to be connected by listed and labeled connection systems (receptacles and plugs) that ensure by design, first-make, last-break of the equipment grounding conductor. Where conductors are connected individually by such connection systems, the outer jacket of multiconductor cord shall be secured to the electrical equipment independent from the receptacles and plugs by approved cable grips that are installed in a manner to prevent pressure from being applied to the receptacles and plugs.

(4) Individual, single conductor, insulated, portable power cable of a type identified in Table 400-4 of the National Electrical Code for extra hard usage, in sizes 1/0 AWG and larger, shall be permitted to be used in the electrical distribution system provided that:

(a) All conductors of the feeder or circuit including the equipment grounding conductor originate in the same electrical equipment and terminate in the same equipment.

(b) All conductors of the feeder or circuit including the ungrounded, grounded, and equipment grounding conductors are run together and, except for portions installed within approved cable protection systems, and installed to comply with Article 520-53 of the National Electrical Code.

(c) All conductors including the grounded circuit conductor (neutral) if used, the equipment grounding conductor and the ungrounded conductors are listed and labeled cable of the same size, conductor material and insulation.

(d) The cables are secured to the electrical equipment independent from the cable receptacles and plugs by approved cable grips that prevent pressure from being applied to the connectors.

(e) The cables are connected to electrical equipment by approved listed and labeled connection systems that ensure by design, first-make, last-break of the equipment grounding conductor.

(5) Disconnecting means. A separate, enclosed, externally operable fused switch or circuit breaker, shall be installed on each amusement ride, structure or concession to disconnect all electrical equipment. The disconnecting means shall be readily accessible and identified as the disconnecting means. Where more than one power supply is employed, the disconnecting means shall be grouped.

(6) Rotating equipment. Components of amusement rides or structures that rotate more than three hundred sixty degrees and which have electrically operated equipment, shall be supplied by approved collector rings that shall be totally enclosed or located so they are accessible to authorized personnel only. The collector rings shall be factory produced with an equipment grounding segment having a voltage and current rating that equals or exceeds the rating of the current carrying segments. Collector rings shall have an ampacity not less than one hundred twenty-five percent of the full-load current of the largest device served plus the full-load current of all other devices served. Collector rings for control and signal purposes shall have an ampacity not less than one hundred twenty-five percent of the full-load current of the largest device served plus the full-load current of all other devices served.

(7) Equipment grounding. All noncurrent carrying metal parts of amusement rides and structures shall be grounded by an equipment grounding conductor routed with the feeder or circuit conductors in accordance with the National Electrical Code and these rules. The metallic structure shall not be used as a current carrying conductor.

Exception: The metallic structure shall be permitted to be used as the return path for low voltage systems that do not exceed thirty volts, provided that the ungrounded conductors are protected by an overcurrent device in accordance with the National Electrical Code and the system is factory built for such use.

(8) Existing amusement rides, concessions or games electrical systems shall comply with the National Electrical Code and shall be maintained in full compliance. Where new amusement rides, concessions or games are purchased, manufactured or constructed, or where existing rides, concessions or games have major modification, the electrical system shall comply with this chapter and the edition of the National Electrical Code in effect at that time. All rides, concessions, and games shall be identified in or on the disconnecting means as well as by make, model and serial number in records furnished to the department with the edition of the National Electrical Code the electrical system is intended to comply with.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-360, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-360, filed 9/10/90, effective 10/11/90. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 86-18-041 (Order 86-23), § 296-46-360, filed 8/29/86. Statutory Authority: RCW 19.28.010 and 19.28.060. 84-15-051 (Order 84-10), § 296-46-360, filed 7/17/84; Order 69-2, § 296-46-360, filed 2/28/69, effective 4/1/69.]

**WAC 296-46-365 Concerts, motion picture productions, stage shows, and similar shows.** (1) Service equipment, separately derived systems, feeders and circuits for concerts, motion picture productions, stage shows, and similar shows, shall comply with the National Electrical Code and this chapter.

(2) All feeders that are field installed shall be of a type and size identified in Article 520-53(h).

(3) Ampacity of cords and cables shall be determined from the appropriate table 400-5(a) or 400-5(b) in the National Electrical Code including all notes thereto.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-365, filed 3/2/93, effective 4/2/93.]

**WAC 296-46-422 Water heater circuit.** Water heaters which have a rated circuit load in excess of 3,500 watts at 240 volts shall be provided with branch circuit conductors not smaller than No. 10 AWG copper or equal.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-422, filed 3/2/93, effective 4/2/93. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 87-10-030 (Order 87-07), § 296-46-422, filed 5/1/87.]

**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. 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. Electrical work permits for temporary construction activity shall expire ninety days after suspended construction and no later than one year after purchase.

(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 snap switches, receptacle outlets or heating elements, replacement of contactors, relays, timers, starters, or similar control components or for plug-in appliances or travel trailers.

[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 296-46-514 Service stations and propane equipment.** In addition to complying with Article 514 of the National Electrical Code, each circuit leading to or through a gasoline pump shall be provided with an emergency disconnect switch or other approved means which shall simultaneously disconnect all circuit conductors including the grounded circuit conductor if any.

The disconnecting means or operator shall be substantially red in color and identified with a sign as the emergency disconnecting means. The disconnecting means or operator shall be readily accessible and shall be located outdoors and within sight of the gasoline pump or dispenser the disconnect controls. For multicircuit installations an electrically held contactor shall be permitted to be used.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-514, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-514, 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), § 296-46-514, filed 5/1/87.]

**WAC 296-46-517 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-46-55001 Repealed.** See Disposition Table at beginning of this chapter.

**WAC 296-46-670 Definitions.** (1) Definitions.

(a) RCW 19.28.005(9) "Industrial control panel" means a factory-wired or user-wired assembly of industrial control equipment such as motor controllers, switches, relays, power supplies, computers, cathode ray tubes, transducers, and auxiliary devices. The panel may include disconnect means and motor branch circuit protective devices.

These assemblies are used in industrial, manufacturing, and food processing plants.

(b) "Industrial plants" do not include:

(i) Municipal or other government facilities.

(ii) Educational facilities or portions thereof.

(iii) Institutional facilities or portions thereof.

(iv) Other installations not used for direct production purposes.

(c) "Manufacturing plants" do not include:

(i) Home workshops.

(ii) Municipal or other governmental facilities.

(iii) Education facilities or portions thereof.

(iv) Institutional facilities or portions thereof.

(v) Other installations not used for direct production purposes.

(d) "Food processing plants" do not include:

(i) Restaurants.

(ii) Farming, ranching, or dairy farm operations.

(e) "Utilization equipment" is the machine or machines and its integral components which are controlled by the "industrial control panel(s)" defined in this section.

(2) "Industrial control panels" will be determined to meet the minimum electrical safety standards for installations by:

(a) Listing, labeling, or other indication of acceptability (including a report of field evaluation) by a testing laboratory accredited for such category of equipment by the department; or

(b) Report of field evaluation by a firm approved by the department to perform the evaluation; or

(c) Inspection by department electrical inspectors for compliance with codes and rules adopted under this chapter; or

(d) Special department inspection requested by "industrial control panel" owner or agent.

(3) "Utilization equipment" will be determined to comply with codes and rules for installation by:

(a) Listing, labeling, or other indication of acceptability (including a report of field evaluation) by a testing laboratory accredited for such category of equipment by the department; or

(b) Inspections by department electrical inspectors.

(4) Fees for special inspections by the department required under subsection (2)(d) of this section, including the time to prepare reports, will be calculated under WAC 296-46-910 (5)(n).

(5) Fees for the inspections by the department under subsections (2)(a), (b), (c) and (3)(a), (b) of this section will be included in the electrical work permit fee calculated for the installation and will not be a separate inspection fee as required under subsection (4) of this section.

(6) Requests for the special inspections under subsection (2)(d) of this section will be on department furnished forms that identify the request as an "industrial control panel" inspection.

(7) Procedures for the special inspection:

(a) The department may require that electrical power to the industrial control panel be deenergized and locked out or disconnected while performing the inspection.

(b) The department may authorize use of the industrial control panel prior to its inspection.

(c) All components of the industrial control panel shall be marked in compliance with NEC Section 110-21. The special inspection requestor shall supply a statement from the manufacturer stating the industrial control panel and its components conform to the requirements of the National Electrical Code, currently adopted Edition; chapter 296-46 WAC; and other standards currently adopted by the department and that they are safe for the intended use. This statement will be furnished to the department prior to a special inspection being performed and will become a part of the permanent special inspection file kept by the department.

(d) Deficiencies:

(i) Will be referenced by the department citing the appropriate code or rule by publication and section (it is expected that the inspector, when asked, will explain his or her interpretation of the code or rule, identifying the deficiency).

(ii) Will be required to be corrected prior to approval by the department.

(iii) Will be required to be corrected, and the department will be notified of such corrections within fifteen days of the date the deficiency was formally identified by the department; or when a longer time is requested by the customer, the department will determine an appropriate time frame consistent with the reason for the request.

The department may authorize the industrial control panel to be, or remain, energized and in service while the deficiencies are being corrected.

(e) Inspection, approval, and correction notices will be in triplicate. A copy will be given to the owner or operator of the facility and to the permittee.

[Statutory Authority: RCW 19.28.010, 19.28.060 and 19.28.250. 94-01-005, § 296-46-670, filed 12/1/93, effective 1/1/94.]

**WAC 296-46-680 Electrical equipment associated with spas, hot tubs, swimming pools or hydromassage bathtubs.** (1) Electrical installations. In addition to complying with the statute, the National Electrical Code, and this chapter, the installation shall comply with electrical testing laboratory standards applicable to the specific equipment or installation.

(2) Package spa or hot tubs. Electrical heating, pumping, filtering, and/or control equipment installed within five feet of a spa or hot tub shall be listed as a package with the spa or hot tub.

(3) Skid packs. A factory assembly of electrical heating, pumping, filtering, and/or control equipment (skid pack) which shall be installed more than five feet from a spa or hot tub and shall be listed as a package unit.

(4) Field assembly of listed electrical equipment for a spa, hot tub, or swim spa. Field installed, listed electrical equipment (as distinguished from recognized components) for a hot tub, spa, or swim spa shall be permitted to be located at least five feet from the hot tub, spa or swim spa, provided that:

(a) The heater is listed as a "spa heater or swimming pool heater"; and

(b) The pump is listed as a "spa pump" or "swimming pool/spa pump" (the pump may be combined with a filter assembly); and

(c) Other listed equipment such as panelboards, conduit, and wire are suitable for the environment and comply with the applicable codes.

(5) Field assembly of listed electrical equipment for swimming pools. Field installed, listed electrical equipment (as distinguished from recognized components) for a swimming pool shall be permitted to be located at least five feet from the swimming pool provided that:

(a) The heater is listed as a "swimming pool heater or a spa heater"; and

(b) The pump is listed as a "swimming pool pump" or "spa pump" or "swimming pool/spa pump"; and

(c) Other equipment such as panelboards, conduit, and wire are suitable for the environment and comply with the applicable codes.

(6) Hydromassage bathtubs. Hydromassage bathtubs shall be listed as a unit and bear a listing mark which reads "hydromassage bathtub."

(7) Manufacturers instructions shall be followed as a part of the listing requirements.

The field assembly or installation of "recognized components" shall not be permitted.

The five foot separation of electrical components may be reduced by the installation of a permanent barrier, such as a solid wall, fixed glass windows or doors, etc. The five foot separation will be determined by the shortest path or route that a cord can travel from the spa, hot tub, swim spa, or swimming pool to an object.

(8) Replacement of electrical equipment. Electrical components which have failed and require replacement shall be replaced with identical products unless the replacement part is no longer available, in which case, a similar product may be substituted provided that the electrical characteristics are identical and that the mechanical and grounding integrity of the equipment is maintained. Recognized components or listed equipment will be permitted to be replaced in kind. Cut-away type display models will not be expected to bear

a listing mark and shall not be sold for other than display purposes.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-680, filed 3/2/93, effective 4/2/93. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 87-10-030 (Order 87-07), § 296-46-680, filed 5/1/87; 86-18-041 (Order 86-23), § 296-46-680, filed 8/29/86.]

**WAC 296-46-700 Emergency systems.** (1) Exit and emergency lights shall be installed in accordance with the National Electrical Code, Article 700, and currently adopted edition of the Uniform Building Code in all health or personal care facilities defined in WAC 296-46-130, educational facilities, institutional facilities, hotels, motels, and places of assembly for one hundred or more persons. Installation shall be made in strict accordance with the National Electrical Code, Article 700, and WAC 296-46-150.

(2) Fire alarm systems. Fire alarm systems required by a city, county or state ordinance, statute, or regulation shall be installed in accordance with the National Electrical Code and this chapter. Power-limited fire alarm systems shall be permitted to be installed in metallic raceways using conductors shown in Section 760-16(b) of the National Electrical Code for nonpower-limited circuits or those 600 volt conductors which are rated for 90 degrees C or greater in Table 310-13 of the National Electrical Code.

(3) Junction boxes for fire alarm systems other than the surface raceway type, shall be substantially red in color. Power-limited fire protective signalling circuit conductors shall be durably and plainly marked in or on junction boxes or other enclosures to indicate that it is a power-limited fire protective signalling circuit. Conductors for light, heat, or power shall not be installed in any enclosure, raceway, cable, compartment, outlet box, or similar fitting containing fire alarm conductors.

(4) All boxes and enclosures, including transfer switches, generators, and power panels for emergency systems and circuits shall be permanently marked with an adhesive label or decal or similar approved means that is suitable for the environment and is substantially red in color.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-700, filed 3/2/93, effective 4/2/93; 90-19-015, § 296-46-700, filed 9/10/90, effective 10/11/90.]

**WAC 296-46-702 Optional standby systems.** Optional standby systems derived from portable generators shall meet all of the requirements of NEC Article 702.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-702, filed 3/2/93, effective 4/2/93.]

**WAC 296-46-710 Identification of cables.** Each cable operating at over 600v and installed as customer owned systems shall be legibly marked at each termination point and at each point the cable is accessible. The required marking shall include; phase designation, operating voltage, and circuit number if applicable.

[Statutory Authority: RCW 19.28.060, 19.28.010(1) and 19.28.600. 93-06-072, § 296-46-710, filed 3/2/93, effective 4/2/93.]

**WAC 296-46-935 Exemptions.** (1) Definitions. The following definitions apply throughout this section.

(a) "Electrical equipment" includes electric lines, wires, apparatus, materials, and equipment.

(b) "License" means a license required under RCW 19.28.120.

(c) "Point of contact" means the point at which a customer's electrical system connects to the serving electrical utilities system.

(d) "Solicit" means to initiate the sale of services by advertisement or other means of offering one's services.

(e) For the purposes of RCW 19.28.200, electrical equipment not owned by a utility is "under the control of the serving electrical utility":

(i) If the equipment is located in a vault, room, closet, or similar enclosure that is secured by a lock or seal such that access is restricted to the serving electrical utilities personnel; or

(ii) If the serving electrical utility is obligated by contract to maintain the equipment and the contract provides that access to the equipment is restricted to the serving electrical utilities personnel.

(f) "Utility system" means electrical equipment owned by or under the control of a serving electrical utility that is used for the transmission or distribution of electricity from the source of supply to the point of contact at the premises or property to be supplied.

(g) "Utilization voltage" means the voltage level employed by the utilities customer for connection to lighting fixtures, motors, heaters, or other electrically operated equipment other than power transformers.

(2) Utility system exemption. Neither a serving electrical utility nor a contractor employed by the serving electrical utility is required to have a license for work on the "utility system" or on service connections or on meters and other apparatus or appliances used to measure the consumption of electricity.

(3) Street lighting exemption. A serving electrical utility is not required to have a license to work on electrical equipment used in the lighting of streets, alleys, ways, or public areas or squares.

(4) Customer owned equipment exemption. A serving electrical utility is not required to have a license to work on electrical equipment owned by a commercial, industrial, or public institution customer if:

(a) The utility has not solicited such work; and

(b) Such equipment:

(i) Is located outside a building or structure; and

(ii) The work performed is on the primary side of the customer's transformer(s) which produces power at the customer's utilization voltage.

(5) Independent power production equipment exemption. A serving electrical utility is not required to have a license to work on electrical equipment owned by a customer that is an independent power producer if:

(a) The customer has entered into an agreement to sell electricity to a utility or to a third party; and

(b) The electrical equipment is used to transmit electricity from the terminals of an electrical generating unit located on premises used by the customer to the point of interconnection with the utility system.

(6) Exempted equipment and installations. No person, firm, partnership, corporation, or other entity is required to

have a license for work on electrical equipment and installations thereof that are exempted by RCW 19.28.010.

(7) Exemption from inspection.

(a) The work of a serving electrical utility and its contractors on the utility system is not subject to inspection.

(b) Work covered by the National Electrical Code is subject to inspection except for work exempted by Section 90-2(B)(5) of the 1981 edition of the National Electrical Code.

(8) Permits to be obtained by customers. Whenever a serving electrical utility does work for a customer under one of the exemptions in this section and the work is subject to inspection, the customer is responsible for obtaining all permits that are required.

[Statutory Authority: RCW 19.28.060. 93-03-048, § 296-46-935, filed 1/15/93, effective 2/15/93.]

## Chapter 296-47 WAC
## ELECTRICAL WIRING AND APPARATUS

WAC

296-47 Repealed.

### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

**Reviser's note:** On March 29, 1961, the department of labor and industries filed with the code reviser's office the November 1959 edition of the N.B.F.U. National Electrical Code #70. On March 31st, the code reviser received a letter from the department stating that such code was adopted by the procedure prescribed by law.

Repealed by 94-01-005, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 19.28.010.

**WAC 296-47 Repealed.** See Disposition Table at beginning of this chapter.

## Chapter 296-56 WAC
## SAFETY STANDARDS—LONGSHORE, STEVEDORE AND RELATED WATERFRONT OPERATIONS

WAC

296-56-60001 Scope and applicability.

**WAC 296-56-60001 Scope and applicability.** (1) The rules included in this chapter apply throughout the state of Washington, to any and all waterfront operations under the jurisdiction of the department of labor and industries, division of industrial safety and health.

(2) These minimum requirements are promulgated in order to augment the general safety and health standards, and any other safety and health standards promulgated by the department of labor and industries which are applicable to all places of employment under the jurisdiction of the department of labor and industries. The rules of this chapter, and the rules of chapters 296-24 and 296-62 WAC are applicable to all longshore, stevedore and related waterfront operations: *Provided,* That such rules shall not be applicable to those operations under the exclusive safety jurisdiction of the federal government.

(3) The provisions of this chapter shall prevail in the event of a conflict with, or duplication of, provisions contained in chapters 296-24 and 296-62 WAC. Specific standards which are applicable include, but are not limited to:

(a) Electrical—Chapter 296-24 WAC Part L.

(b) Toxic and hazardous substances are regulated by chapter 296-62 WAC. Where references to this chapter are given they are for informational purposes only. Where specific requirements of this chapter conflict with the provisions of chapter 296-62 WAC this chapter prevails. Chapter 296-62 WAC does not apply when a substance or cargo is contained within a manufacturer's original, sealed, intact means of packaging or containment complying with the department of transportation or International Maritime Organization requirements.

(c) Hearing conservation—Chapter 296-62 WAC Part K.

(d) Standards for commercial diving operations—Chapter 296-37 WAC.

(e) Safety requirements for scaffolding—Chapter 296-24 WAC Part J-1.

(f) Safe practices of abrasive blasting operations—Chapter 296-24 WAC Part H-2.

(g) Access to employee exposure and medical records—Chapter 296-62 WAC Part B.

(h) Respiratory protection—Chapter 296-62 WAC Part E.

(i) Safety standards for grain handling facilities—Chapter 296-99 WAC.

(j) Hazard communication purpose—Chapter 296-62 WAC Part C.

(k) Asbestos—Chapters 296-62 Part I-1 and 296-65 WAC.

(l) Confined space—Chapter 296-62 WAC Part M.

(m) Servicing multi-piece and single-piece rim wheels—Chapter 296-24 WAC Part D.

(4) The provisions of this chapter do not apply to the following:

(a) Fully automated bulk coal handling facilities contiguous to electrical power generating plants.

(b) Facilities subject to the regulations of the office of pipeline safety regulation of the materials transportation bureau, department of transportation, to the extent such regulations apply.

(5) WAC 296-62-074 shall apply to the exposure of every employee to cadmium in every employment and place of employment covered by chapter 296-56 WAC in lieu of any different standard on exposures to cadmium that would otherwise be applicable by virtue of those sections.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-56-60001, filed 3/13/93, effective 4/27/93. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60001, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-56-60001, filed 11/22/91, effective 12/24/91; 89-11-035 (Order 89-03), § 296-56-60001, filed 5/15/89, effective 6/30/89; 88-14-108 (Order 88-11), § 296-56-60001, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60001, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60001, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60001, filed 12/11/84.]

# Chapter 296-62 WAC
# OCCUPATIONAL HEALTH STANDARDS—SAFETY STANDARDS FOR CARCINOGENS

WAC



**WAC 296-62-07105 Definitions.** (1) Abrasive-blasting respirator. See "respirator." A respirator designed to protect the wearer against inhalation of abrasive material and against impact and abrasion from rebounding abrasive material.

(2) Accepted. Reviewed and listed as satisfactory for a specified use by the director or his or her designee.

(3) Aerodynamic diameter. The diameter of a unit density sphere having the same settling velocity as the particle in question of whatever shape and density.

(4) Aerosol. A system consisting of particles, solid or liquid, suspended in air.

(5) Air-line respirator. See "respirator."

(6) Air-purifying respirator. See "respirator."

(7) Air-regulating valve. An adjustable valve used to regulate, but which cannot completely shut off the airflow to the facepiece, helmet, hood, or suit of an air-line respirator.

(8) Air-supply device. A hand- or motor-operated blower for the hose mask, or a compressor or other source of respirable air for the air-line respirator.

(9) Approved. Tested and listed as satisfactory by the Bureau of Mines (BM) of the U.S. Department of Interior, or jointly by the Mining Enforcement and Safety Administration (MESA) of the U.S. Department of Interior and the National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services, or jointly by the Mine Safety and Health Administration (MSHA) of the U.S. Department of Labor and NIOSH under the provisions of Title 30, Code of Federal Regulations, Part 11.

(10) Bioassay. A determination of the concentration of a substance in a human body by an analysis of urine, feces, blood, bone, or tissue.

(11) Breathing tube. A tube through which air or oxygen flows to the facepiece, mouthpiece, helmet, hood, or suit.

(12) Canister (air-purifying). A container with a filter, sorbent, or catalyst, or any combination thereof, which removes specific contaminants from the air drawn through it.

(13) Canister (oxygen-generating). A container filled with a chemical which generates oxygen by chemical reaction.

(14) Carcinogen. A substance known to produce cancer in some individuals following a latent period (for example: Asbestos, Chromates, radioactive particulates).

(15) Cartridge (air-purifying). A small canister.

(16) Catalyst. In respirator use, a substance which converts a toxic gas (or vapor) into a less-toxic gas (or vapor).

(17) Ceiling concentration. The concentration of an airborne substance that shall not be exceeded.

(18) Chemical-cartridge respirator. See respirator.

(19) Confined space. Chapter 296-62 WAC Part M.

(20) Contaminant. A harmful, irritating, or nuisance material that is foreign to the normal atmosphere.

(21) Corrective lens. A lens ground to the wearer's individual corrective prescription to permit normal visual acuity.

(22) Demand. A type of self-contained breathing apparatus or type of air-line respirator which functions due to the negative pressure created by inhalation (i.e., air flow into the facepiece on "demand").

(23) Detachable coupling. A device which permits the respirator wearer, without using hand tools, to detach the air-supply line from that part of the respirator worn on the person.

(24) Dust. See WAC 296-62-07001(1).

(25) Emergency respirator use. Wearing a respirator when a hazardous atmosphere suddenly occurs that requires immediate use of a respirator either for escape from the hazardous atmosphere or for entry into the hazardous atmosphere.

(26) Exhalation valve. A device that allows exhaled air to leave a respirator and prevents outside air from entering through the valve.

(27) Eyepiece. A gas-tight, transparent window(s) in a full facepiece, helmet, hood, or suit, through which the wearer may see.

(28) Facepiece. That portion of a respirator that covers the wearer's nose and mouth in quarter-mask (above the chin) or half-mask (under the chin) facepiece or that covers the nose, mouth, and eyes in a full facepiece. It is designed to make a gas-tight or particle-tight fit with the face and includes the headbands, exhalation valve(s), and connections for an air-purifying device or respirable gas source, or both.

(29) Face shield. A device worn in front of the eyes and a portion of, or all of, the face, whose predominant function is protection of the eyes and the face.

(30) Fibrosis-producing dust. Dust which, when inhaled, deposited, and retained in the lungs, may produce findings of fibrotic growth that may cause pulmonary disease.

(31) Filter. A media component used in respirators to remove solid or liquid particles from the inspired air.

(32) Filter respirator. See respirator.

(33) Fog. A mist of sufficient concentration to perceptibly obscure vision.

(34) Full facepiece. See facepiece.

(35) Fume. See WAC 296-62-07001(2).

(36) Gas. An aeriform fluid which is in the gaseous state at ordinary temperature and pressure.

(37) Gas mask. See respirator.

(38) Goggle. A device, with contour-shaped eyecups with glass or plastic lenses, worn over eyes and held in place by a headband or other suitable means for the protection of the eyes and eye sockets.

(39) Half-mask facepiece. See facepiece.

(40) 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.

(41) Head harness. That part of a facepiece assembly which secures the facepiece to the wearer.

(42) Helmet. That portion of a respirator which shields the eyes, face, neck, and other parts of the head.

(43) High-efficiency filter. A filter which removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

(44) Hood. That portion of a respirator which completely covers the head, neck, and portions of the shoulders.

(45) Hose mask. See respirator.

(46) Immediately dangerous to life or health (IDLH). Any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.

(47) Inhalation valve. A device that allows respirable air to enter a respirator and prevents exhaled air from leaving the respirator through the valve.

(48) Irrespirable. Unfit for breathing.

(49) Maximum use limit of filter, cartridge, or canister. The maximum concentration of a contaminant for which an air-purifying filter, cartridge, or canister is approved for use.

(50) Mist. See WAC 296-62-07001(4).

(51) Mouthpiece. That portion of a respirator which is held in the wearer's mouth and is connected to an air-purifying device or respirable gas source, or both. It is designed to make a gas-tight or particle-tight fit with the mouth.

(52) MPCa. Maximum permissible airborne concentration. These concentrations are set by the National Committee on Radiation Protection. They are recommended maximum average concentrations of radionuclides to which a worker may be exposed, assuming that he/she works 8 hours a day, 5 days a week, and 50 weeks a year.

(53) Negative pressure respirator. A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

(54) Nonroutine respirator use. Wearing a respirator when carrying out a special task that occurs infrequently.

(55) Nose clamp. A device used with a respirator equipped with a mouthpiece that closes the nostrils of the wearer (sometimes called a nose clip).

(56) Not immediately dangerous to life or health. Any hazardous atmosphere which may produce physical discomfort immediately, chronic poisoning after repeated exposure, or acute adverse physiological symptoms after prolonged exposure.

(57) Odor threshold limit. The lowest concentration of a contaminant in air that can be detected by the olfactory sense.

(58) Oxygen deficiency - immediately dangerous to life or health. An atmosphere which causes an oxygen partial pressure of 100 millimeters of mercury column or less in the freshly inspired air in the upper portion of the lungs which is saturated with water vapor.

(59) Oxygen deficiency - not immediately dangerous to life or health. An atmosphere having an oxygen concentration below the minimum legal requirement of 19.5% by volume for respirable air at sea-level conditions, but above that which is immediately dangerous to life or health.

(60) Particulate matter. A suspension of fine solid or liquid particles in air, such as: Dust, fog, fume, mist, smoke, or spray. Particulate matter suspended in air is commonly known as an aerosol.

(61) Permissible exposure limit (PEL). The legally established time-weighted average (TWA) concentration or ceiling concentration of a contaminant that shall not be exceeded.

(62) Pneumoconiosis-producing dust. Dust which, when inhaled, deposited, and retained in the lungs, may produce signs, symptoms, and findings of pulmonary disease.

(63) Positive-pressure respirator. A respirator in which the air pressure inside the respiratory-inlet covering is positive in relation to the air pressure of the outside atmosphere during exhalation and inhalation.

(64) Powered air-purifying respirator. See respirator.

(65) Pressure demand. Similar to a demand type respirator but so designed to maintain positive pressure in the facepiece at all times.

(66) Protection factor. The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer. As used herein, a protection factor is synonymous with the fit factor assigned to a respirator facepiece by the use of qualitative and quantitative fitting tests.

(67) Rescue respirator use. Wearing a respirator for entry into a hazardous atmosphere to rescue a person(s) in the hazardous atmosphere.

(68) Resistance. Opposition to the flow of air, as through a canister, cartridge, particulate filter, orifice, valve, or hose.

(69) Respirable. Suitable for breathing.

(70) Respirator. A device designed to protect the wearer from the inhalation of harmful atmospheres.

(71) Respiratory-inlet covering. That portion of a respirator which connects the wearer's respiratory tract to an air-purifying device or respirable gas source, or both. It may be a facepiece, helmet, hood, suit, or mouthpiece/nose clamp.

(72) Routine respirator use. Wearing a respirator as a normal procedure when carrying out a regular and frequently repeated task.

(73) Sanitization. The removal of dirt and the inhibiting of the action of agents that cause infection or disease.

(74) Self-contained breathing apparatus. See respirator.

(75) Service life. The period of time that a respirator 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 inspired air.

(76) Smoke. A system which 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.

(77) Sorbent. A material which is contained in cartridge or canister and which removes toxic gases and vapors from the inhaled air.

(78) Spray. A liquid, mechanically produced particle with sizes generally in the visible or macroscopic range.

(79) Supplied-air respirator. See respirator.

(80) Supplied-air suit. A suit that is impermeable to most particulate and gaseous contaminants and that is provided with an adequate supply of respirable air.

(81) Time-weighted average (TWA). The average concentration of a contaminant in air during a specific time period.

(82) Valve (air or oxygen). A device which controls the pressure, direction, or rate of flow of air or oxygen.

(83) Vapor. The gaseous state of a substance that is solid or liquid at ordinary temperature and pressure.

(84) Welding helmet. A device designed to provide protection for the eyes and face against intense radiant energy and molten metal splatter encountered in the welding and cutting of metals.

(85) Window indicator. A device on a cartridge or canister that visually denotes the service life of the cartridge or canister.

[Statutory Authority: Chapter 49.17 RCW. 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 296-62-074 Cadmium.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-074, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07401 Scope.** This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Washington Industrial Safety and Health Act, except the construction-related industries, which are covered under WAC 296-155-174.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07401, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07403 Definitions.** (1) Action level (AL) is defined as an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air (2.5 $\mu g/m^3$), calculated as an 8-hour time-weighted average (TWA).

(2) 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 the WISH Act or regulations issued under it to be in regulated areas.

(3) Director means the director of the department of labor and industries, or authorized representatives.

(4) 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.

(5) Final medical determination is the written medical opinion of the employee's health status by the examining physician under WAC 296-62-07423(3) through (12) or, if multiple physician review under WAC 296-62-07423(13) or the alternative physician determination under WAC 296-62-07423(14) is invoked, it is the final, written medical finding, recommendation or determination that emerges from that process.

(6) 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.

(7) 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).

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07403, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07403, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07405 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 $\mu g/m^3$), calculated as an 8-hour time-weighted average exposure (TWA).

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07405, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07407 Exposure monitoring.** (1) General.

(a) Each employer who has a workplace or work operation covered
by this section shall determine if any employee may be exposed to cadmium at or above the action level.

(b) 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.

(c) 8-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.

(2) Specific.

(a) Initial monitoring. Except as provided for in (b) and (c) of this subsection, the employer shall monitor employee exposures and shall base initial determinations on the monitoring results.

(b) Where the employer has monitored after September 14, 1991, under conditions that in all important aspects closely resemble those currently prevailing and where that monitoring satisfies all other requirements of this section, including the accuracy and confidence levels of subsection (6) of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of WAC 296-62-07427 (2)(a).

(c) Where the employer has objective data, as defined in WAC 296-62-07427(2), demonstrating that employee exposure to cadmium will not exceed the action level under the expected conditions of processing, use, or handling, the employer may rely upon such data instead of implementing initial monitoring.

(3) Monitoring frequency (periodic monitoring).

(a) 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 represent the levels of exposure of employees and where exposures are above the PEL to assure the adequacy of respiratory selection and the effectiveness of engineering and work practice controls. However, such exposure monitoring shall be performed at least every six months. The employer, at a minimum, shall continue these semiannual measurements unless and until the conditions set out in (b) of this subsection are met.

(b) 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.

(4) Additional monitoring. The employer also shall institute the exposure monitoring required under (2)(a) and (3) of this section 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 has any reason to suspect that any other change might result in such further exposure.

(5) Employee notification of monitoring results.

(a) Within fifteen 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.

(b) 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.

(6) Accuracy of measurement. The employer shall use a method of monitoring and analysis that has an accuracy of not less than plus or minus twenty-five percent, with a confidence level of ninety-five percent, for airborne concentrations of cadmium at or above the action level, the permissible exposure limit (PEL), and the separate engineering control air limit (SECAL).

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07407, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07409 Regulated areas.** (1) 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).

(2) 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.

(3) Access. Access to regulated areas shall be limited to authorized persons.

(4) Provision of respirators. Each person entering a regulated area shall be supplied with and required to use a respirator, selected in accordance with WAC 296-62-07413(2).

(5) Prohibited activities. The employer shall assure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas, carry the products associated with these activities into regulated areas, or store such products in those areas.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07409, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07411 Methods of compliance.** (1) Compliance hierarchy.

(a) Except as specified in (b), (c), and (d) 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.

(b) Except as specified in (c) and (d) of this subsection, in industries where a separate engineering control air limit (SECAL) has been specified for particular processes (Table 1 of this subsection), the employer shall implement engineering and work practice controls to reduce and maintain employee exposure at or below the SECAL, except to the extent that the employer can demonstrate that such controls are not feasible.

Table I.—Separate Engineering Control Airborne Limits (SECALs) for Processes in Selected Industries

| Industry | Process | SECAL ($\mu g/m^3$) |
|---|---|---|
| Nickel cadmium battery | Plate making, plate preparation | 50 |
| | All other processes | 15 |
| Zinc/Cadmium refining* | Cadmium refining, casting, melting, oxide production, sinter plant | 50 |
| Pigment manufacture | Calcine, crushing, milling, blending | 50 |
| | All other processes | 15 |
| Stabilizers* | Cadmium oxide charging, crushing, drying, blending | 50 |
| Lead smelting* | Sinter plant, blast furnace, baghouse, yard area | 50 |
| Plating* | Mechanical plating | 15 |

* Processes in these industries that are not specified in this table must achieve the PEL using engineering controls and work practices as required in (a) of this subsection.

(c) The requirement to implement engineering and work practice controls to achieve the PEL or, where applicable, the SECAL does not apply where the employer demonstrates the following:

(i) The employee is only intermittently exposed; and

(ii) The employee is not exposed above the PEL on thirty or more days per year (twelve consecutive months).

(d) Wherever engineering and work practice controls are required and are not sufficient to reduce employee exposure to or below the PEL or, where applicable, the SECAL, 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 WAC 296-62-07413 and the PEL.

(e) The employer shall not use employee rotation as a method of compliance.

(2) Compliance program.

(a) Where the PEL is exceeded, the employer shall establish and implement a written compliance program to reduce employee exposure to or below the PEL by means of engineering and work practice controls, as required by subsection (1) of this section. 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.

(b) Written compliance programs shall include at least the following:

(i) A description of each operation in which cadmium is emitted; e.g., machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices;

(ii) 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 cadmium, as well as, where necessary, the use of appropriate respiratory protection to achieve the PEL;

(iii) A report of the technology considered in meeting the PEL;

(iv) Air monitoring data that document the sources of cadmium emissions;

(v) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;

(vi) A work practice program that includes items required under WAC 296-62-07415, 296-62-07417, and 296-62-07419;

(vii) A written plan for emergency situations, as specified in WAC 296-62-07415; and

(viii) Other relevant information.

(c) The written compliance programs shall be reviewed and updated at least annually, or more often if necessary, to reflect significant changes in the employer's compliance status.

(d) Written compliance programs shall be provided upon request for examination and copying to affected employees, designated employee representatives, and the director.

(3) Mechanical ventilation.

(a) 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.

(b) 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.

(c) 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.

(d) Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters is being conducted.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07411, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07411, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07413 Respirator protection.** (1) General. Where respirators are required by this section, the employer shall provide them at no cost to the employee and

shall assure that they are used in compliance with the requirements of this section. Respirators shall be used in the following circumstances:

(a) Where exposure levels exceed the PEL, during the time period necessary to install or implement feasible engineering and work practice controls;

(b) In those maintenance and repair activities and during those brief or intermittent operations where exposures exceed the PEL and engineering and work practice controls are not feasible or are not required;

(c) In regulated areas, as prescribed in WAC 296-62-07409;

(d) Where 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;

(e) In emergencies;

(f) Wherever an employee who is exposed to cadmium at or above the action level requests a respirator;

(g) Wherever an employee is exposed above the PEL in an industry to which a SECAL is applicable; and

(h) Wherever an employee is exposed to cadmium above the PEL and engineering controls are not required under WAC 296-62-07411 (1)(c).

(2) Respirator selection.

(a) Where respirators are required under this section, the employer shall select and provide the appropriate respirator as specified in Table 2. The employer shall select respirators from among those jointly approved as acceptable protection against cadmium dust, fume, and mist by the Mine Safety and Health Administration (MSHA) and by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR part 11.

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. |
| >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 ($10x5\ \mu g/m^3=50\ \mu g/m^3$). 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 shall provide a powered, air-purifying respirator (PAPR) in lieu of a negative pressure respirator wherever:

(i) An employee entitled to a respirator chooses to use this type of respirator; and

(ii) This respirator will provide adequate protection to the employee.

(3) Respirator program.

(a) Where respiratory protection is required, the employer shall institute a respirator protection program in accordance with chapter 296-62 WAC, Part E.

(b) The employer shall permit each employee who is required to use an air purifying respirator to leave the regulated area to change the filter elements or replace the respirator whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.

(c) The employer shall also permit each employee who is required to wear a respirator to leave the regulated area to wash his or her face and the respirator facepiece whenever necessary to prevent skin irritation associated with respirator use.

(d) If an employee exhibits difficulty in breathing while wearing a respirator during a fit test or during use, the employer shall make available to the employee a medical examination in accordance with WAC 296-62-07423 (6)(b) to determine if the employee can wear a respirator while performing the required duties.

(e) No employee shall be assigned a task requiring the use of a respirator if, based upon his or her most recent examination, an examining physician determines that the employee will be unable to continue to function normally while wearing a respirator. If the physician determines the employee must be limited in, or removed from his or her current job because of the employee's inability to wear a respirator, the limitation or removal shall be in accordance with WAC 296-62-07423 (11) and (12).

(4) Respirator fit testing.

(a) The employer shall assure that the respirator issued to the employee is fitted properly and exhibits the least possible facepiece leakage.

(b) For each employee wearing a tight-fitting, air purifying respirator (either negative or positive pressure) who is exposed to airborne concentrations of cadmium that do not exceed 10 times the PEL (10 x 5 $\mu g/m^3$=50 $\mu g/m^3$), the employer shall perform either quantitative or qualitative fit testing at the time of initial fitting and at least annually thereafter. If quantitative fit testing is used for a negative pressure respirator, a fit factor that is at least 10 times the protection factor for that class of respirators (Table 2 in subsection (2)(a) of this section) shall be achieved at testing.

(c) For each employee wearing a tight-fitting air purifying respirator (either negative or positive pressure) who is exposed to airborne concentrations of cadmium that exceed 10 times the PEL (10 x 5 $\mu g/m^3$=50 $\mu g/m^3$), the employer shall perform quantitative fit testing at the time of initial fitting and at least annually thereafter. For negative-pressure respirators, a fit factor that is at least 10 times the protection factor for that class of respirators (Table 2 in subsection (2)(a) of this section) shall be achieved during quantitative fit testing.

(d) For each employee wearing a tight-fitting, supplied-air respirator or self-contained breathing apparatus, the employer shall perform quantitative fit testing at the time of initial fitting and at least annually thereafter. This shall be accomplished by fit testing an air purifying respirator of identical type facepiece, make, model, and size as the supplied air respirator or self-contained breathing apparatus that is equipped with HEPA filters and tested as a surrogate (substitute) in the negative pressure mode. A fit factor that is at least 10 times the protection factor for that class of respirators (Table 2 in subsection (2)(a) of this section) shall be achieved during quantitative fit testing. A supplied-air respirator or self- contained breathing apparatus with the same type facepiece, make, model, and size as the air purifying respirator with which the employee passed the quantitative fit test may then be used by that employee up to the protection factor listed in Table 2 for that class of respirators.

(e) Fit testing shall be conducted in accordance with WAC 296-62-07445, Appendix C.

[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 296-62-07415 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.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07415, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07417 Protective work clothing and equipment.** (1) 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:

(a) Coveralls or similar full-body work clothing;

(b) Gloves, head coverings, and boots or foot coverings; and

(c) Face shields, vented goggles, or other appropriate protective equipment that complies with WAC 296-24-078.

(2) Removal and storage.

(a) 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 WAC 296-62-07419(1).

(b) 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.

(c) 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.

(d) The employer shall assure that bags or 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 WAC 296-62-07425(3).

(3) Cleaning, replacement, and disposal.

(a) The employer shall provide the protective clothing and equipment required by subsection (1) of this section 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 paragraph to maintain its effectiveness and is also responsible for disposing of such clothing and equipment.

(b) 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.

(c) 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.

(d) 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 WAC 296-62-07405.

(e) 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.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07417, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07417, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07419 Hygiene areas and practices.** (1) 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 296-24-120.

(2) 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.

(3) Showers and handwashing facilities.

(a) The employer shall assure that employees who are exposed to cadmium above the PEL shower during the end of the work shift.

(b) The employer shall assure that employees whose airborne exposure to cadmium is above the PEL wash their hands and faces prior to eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics.

(4) Lunchroom facilities.

(a) 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 $\mu g/m^3$.

(b) 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.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07419, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07421 Housekeeping.** (1) All surfaces shall be maintained as free as practicable of accumulations of cadmium.

(2) All spills and sudden releases of material containing cadmium shall be cleaned up as soon as possible.

(3) Surfaces contaminated with cadmium shall, wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of cadmium becoming airborne.

(4) 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.

(5) 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.

(6) 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.

(7) 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 WAC 296-62-07425(2).

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07421, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07423 Medical surveillance.** (1) General.

(a) Scope.

(i) Currently exposed. The employer shall institute a medical surveillance program for all employees who are or may be exposed to cadmium at or above the action level unless the employer demonstrates that the employee is not, and will not be, exposed at or above the action level on thirty or more days per year (twelve consecutive months); and

(ii) Previously exposed. The employer shall also institute a medical surveillance program for all employees who prior to the effective date of this section might previously have been exposed to cadmium at or above the action level by the employer, unless the employer demonstrates that the employee did not prior to the effective date of this section work for the employer in jobs with exposure to cadmium for an aggregated total of more than sixty months.

(b) To determine an employee's fitness for using a respirator, the employer shall provide the limited medical examination specified in subsection (6) of this section.

(c) The employer shall assure that all medical examinations and procedures required by this standard 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 laboratory selection in WAC 296-62-07451, Appendix F and the questionnaire of WAC 296-62-07447, Appendix D. These examinations and procedures shall be provided without cost to the employee and at a time and place that is reasonable and convenient to employees.

(d) 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 ($ß_2$-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 ($ß_2$-M) taken from employees under this section is performed in laboratories with demonstrated proficiency for that particular analyte. (See WAC 296-62-07451, Appendix F.)

(2) Initial examination.

(a) The employer shall provide an initial (preplacement) examination to all employees covered by the medical surveillance program required in subsection (1)(a) of this section. The examination shall be provided to those employees within thirty days after initial assignment to a job with exposure to cadmium or no later than ninety days after the effective date of this section, whichever date is later.

(b) The initial (preplacement) medical examination shall include:

(i) 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

(ii) Biological monitoring that includes the following tests:

(A) Cadmium in urine (CdU), standardized to grams of creatinine (g/Cr);

(B) Beta-2 microglobulin in urine ($ß_2$-M), standardized to grams of creatinine (g/Cr), with pH specified, as described in WAC 296-62-07451, Appendix F; and

(C) Cadmium in blood (CdB), standardized to liters of whole blood (lwb).

(c) 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) of this subsection within the past twelve 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 subsections (3) and (4) of this section.

(3) Actions triggered by initial biological monitoring:

(a) If the results of the initial biological monitoring tests show the employee's CdU level to be at or below 3 µg/g Cr, $ß_2$-M level to be at or below 300 µg/g Cr and CdB level to be at or below 5 µg/lwb, then:

(i) For currently exposed employees, who are subject to medical surveillance under subsection (1)(a)(i) of this section, the employer shall provide the minimum level of periodic medical surveillance in accordance with the requirements in subsection (4)(a) of this section; and

(ii) For previously exposed employees, who are subject to medical surveillance under subsection (1)(a)(ii) of this section, the employer shall provide biological monitoring for CdU, $ß_2$-M, and CdB one year after the initial biological monitoring and then the employer shall comply with the requirements of subsection (4)(e) of this section.

(b) For all employees who are subject to medical surveillance under subsection (1)(a) of this section, if the results of the initial biological monitoring tests show the level of CdU to exceed 3 µg/g Cr, the level of ß2-M to exceed 300 µg/g Cr, or the level of CdB to exceed 5 µg/lwb, the employer shall:

(i) Within two weeks after receipt of biological monitoring results, reassess the employee's occupational exposure to cadmium as follows:

(A) Reassess the employee's work practices and personal hygiene;

(B) Reevaluate the employee's respirator use, if any, and the respirator program;

(C) Review the hygiene facilities;

(D) Reevaluate the maintenance and effectiveness of the relevant engineering controls;

(E) Assess the employee's smoking history and status;

(ii) Within thirty days after the exposure reassessment, specified in (b)(i) 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,

(iii) Within ninety days after receipt of biological monitoring results, provide a full medical examination to the employee in accordance with the requirements of WAC 296-62-07423 (4)(b). 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, ß2-M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall:

(A) Provide biological monitoring in accordance with subsection (2)(b)(ii) of this section on a semiannual basis; and

(B) Provide annual medical examinations in accordance with subsection (4)(b) of this section.

(c) For all employees who are subject to medical surveillance under subsection (1)(a) of this section, 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 $ß_2$-M to be in excess of 1,500 µg/g Cr, the employer shall comply with the requirements of (b)(i) and (ii) of this subsection. Within ninety days after receipt of biological monitoring results, the employer shall provide a full medical examination to the employee in accordance with the requirements of subsection (4)(b) of this section. 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 $ß_2$-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, $ß_2$-M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall:

(i) Periodically reassess the employee's occupational exposure to cadmium;

(ii) Provide biological monitoring in accordance with subsection (2)(b)(ii) of this section on a quarterly basis; and

(iii) Provide semiannual medical examinations in accordance with subsection (4)(b) of this section.

(d) For all employees to whom medical surveillance is provided, beginning on January 1, 1999, and in lieu of (a) through (c) of this subsection:

(i) If the results of the initial biological monitoring tests show the employee's CdU level to be at or below 3 μg/g Cr, $ß_2$-M level to be at or below 300 μg/g Cr and CdB level to be at or below 5 μg/lwb, then for currently exposed employees, the employer shall comply with the requirements of (a)(i) of this subsection and for previously exposed employees, the employer shall comply with the requirements of (a)(ii) of this subsection;

(ii) If the results of the initial biological monitoring tests show the level of CdU to exceed 3 μg/g Cr, the level of $ß_2$-M to exceed 300 μg/g Cr, or the level of CdB to exceed 5 μg/lwb, the employer shall comply with the requirements of (b)(i) through (iii) of this subsection; and

(iii) If the results of the initial biological monitoring tests show the level of CdU to be in excess of 7 μg/g Cr, or the level of CdB to be in excess of 10 μg/lwb, or the level of $ß_2$-M to be in excess of 750 μg/g Cr, the employer shall: Comply with the requirements of (b)(i) through (ii) of this subsection; and, within ninety days after receipt of biological monitoring results, provide a full medical examination to the employee in accordance with the requirements of subsection (4)(b) of this section. 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 μg/g Cr; or CdB exceeds 10 μg/lwb; or $ß_2$-M exceeds 750 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, $ß_2$-M level falls to or below 300 μg/g Cr and CdB level falls to or below 5 μg/lwb, the employer shall: periodically reassess the employee's occupational exposure to cadmium; provide biological monitoring in accordance with subsection (2)(b)(ii) of this section on a quarterly basis; and provide semiannual medical examinations in accordance with subsection (4)(b) of this section.

(4) Periodic medical surveillance.

(a) For each employee who is covered under subsection (1)(a)(i) of this section, 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 subsection (2) of this section 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.

(b) The periodic medical examination shall include:

(i) 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 3-11 and 25-32 in WAC 296-62-07447, Appendix D;

(ii) A complete physical examination with emphasis on: Blood pressure, the respiratory system, and the urinary system;

(iii) 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);

(iv) Pulmonary function tests, including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1);

(v) Biological monitoring, as required in subsection (2)(b)(ii) of this section;

(vi) Blood analysis, in addition to the analysis required under this section, including blood urea nitrogen, complete blood count, and serum creatinine;

(vii) Urinalysis, in addition to the analysis required under subsection (2)(b)(ii) of this section, including the determination of albumin, glucose, and total and low molecular weight proteins;

(viii) For males over forty years old, prostate palpation, or other at least as effective diagnostic test(s); and

(ix) Any additional tests deemed appropriate by the examining physician.

(c) Periodic biological monitoring shall be provided in accordance with subsection (2)(b)(ii) of this section.

(d) 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, $ß_2$-M, or CdB to be in excess of the levels specified in subsection (3)(b) or (c) of this section; or, beginning on January 1, 1999, in excess of the levels specified in subsection (3)(b) or (d) of this section, the employer shall take the appropriate actions specified in subsection (3)(b) through (d) of this section.

(e) For previously exposed employees under subsection (1)(a)(ii) of this section:

(i) If the employee's levels of CdU did not exceed 3 μg/g Cr, CdB did not exceed 5 μg/lwb, and $ß_2$-M did not exceed 300 μg/g Cr in the initial biological monitoring tests, and if the results of the followup biological monitoring required by subsection (3)(a)(ii) of this section one year after the initial examination confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.

(ii) If the initial biological monitoring results for CdU, CdB, or $ß_2$-M were in excess of the levels specified in subsection (3)(a) of this section, but subsequent biological monitoring results required by subsection (3)(b) through (e) of this section show that the employee's CdU levels no longer exceed 3 μg/g Cr, CdB levels no longer exceed 5 μg/lwb, and $ß_2$-M levels no longer exceed 300 μg/g Cr, the employer shall provide biological monitoring for CdU, CdB,

and $ß_2$-M one year after these most recent biological monitoring results. If the results of the followup biological monitoring, specified in this section, confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.

(iii) However, if the results of the follow-up tests specified in (e)(i) or (ii) of this subsection indicate that the level of the employee's CdU, $ß_2$-M, or CdB exceeds these same levels, the employer is required to provide annual medical examinations in accordance with the provisions of (b) 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.

(f) A routine, biennial medical examination is not required to be provided in accordance with subsections (3)(a) and (4) of this section if adequate medical records show that the employee has been examined in accordance with the requirements of (b) of this subsection within the past twelve 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.

(5) 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 subsections (2), (3), or (4) of this section, the employer, within thirty days, shall reassess the employee's occupational exposure to cadmium and take the following corrective action until the physician determines they are no longer necessary:

(a) 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; and the maintenance and effectiveness of the relevant engineering controls;

(b) Within thirty days after the reassessment, take all reasonable steps to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium;

(c) 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

(d) 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.

(6) Examination for respirator use.

(a) To determine an employee's fitness for respirator use, the employer shall provide a medical examination that includes the elements specified in (a)(i) through (iv) 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 ninety days after this section goes into effect, whichever date is later, to any employee without a medical examination within the preceding twelve months that satisfies the requirements of this paragraph.

(i) 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 musculoskeletal 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;

(ii) A blood pressure test;

(iii) Biological monitoring of the employee's levels of CdU, CdB and $ß_2$-M in accordance with the requirements of subsection (2)(b)(ii) of this section, unless such results already have been obtained within the previous twelve months; and

(iv) Any other test or procedure that the examining physician deems appropriate.

(b) After reviewing all the information obtained from the medical examination required in (a) of this subsection, the physician shall determine whether the employee is fit to wear a respirator.

(c) 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 subsection (4)(b) of this section to determine the employee's fitness to wear a respirator.

(d) Where the results of the examination required under (a), (b), or (c) 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.

(7) Emergency examinations.

(a) In addition to the medical surveillance required in subsections (2) through (6) of this section, 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.

(b) The examination shall include the requirements of subsection (4)(b) of this section, with emphasis on the respiratory system, other organ systems considered appropriate by the examining physician, and symptoms of acute overexposure, as identified in WAC 296-62-07441 (2)(b)(i) through (ii) and (4), Appendix A.

(8) Termination of employment examination.

(a) At termination of employment, the employer shall provide a medical examination in accordance with subsection (4)(b) of this section, including a chest x-ray, to any employee to whom at any prior time the employer was required to provide medical surveillance under subsection (1)(a) or (7) of this section. However, if the last examination satisfied the requirements of subsection (4)(b) of this section and was less than six months prior to the date of termination, no further examination is required unless otherwise specified in subsection (3) or (5) of this section;

(b) However, for employees covered by subsection (1)(a)(ii) of this section, if the employer has discontinued all periodic medical surveillance under subsection (4)(e) of this section, no termination of employment medical examination is required.

(9) Information provided to the physician. The employer shall provide the following information to the examining physician:

(a) A copy of this standard and appendices;

(b) A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to cadmium;

(c) The employee's former, current, and anticipated future levels of occupational exposure to cadmium;

(d) 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

(e) Relevant results of previous biological monitoring and medical examinations.

(10) Physician's written medical opinion.

(a) 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:

(i) The physician's diagnosis for the employee;

(ii) 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;

(iii) The results of any biological or other testing or related evaluations that directly assess the employee's absorption of cadmium;

(iv) 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;

(v) 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.

(b) The employer promptly shall obtain a copy of the results of any biological monitoring provided by an employer to an employee independently of a medical examination under subsections (2) and (4) of this section, and, in lieu of a written medical opinion, an explanation sheet explaining those results.

(c) 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.

(11) Medical removal protection (MRP).

(a) General.

(i) 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 subsection (3), (4), or (6) of this section 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.

(ii) The employer shall medically remove an employee in accordance with this subsection regardless of whether at the time of removal a job is available into which the removed employee may be transferred.

(iii) Whenever an employee is medically removed under this subsection, the employer shall transfer the removed employee to a job where the exposure to cadmium is within the permissible levels specified in that subsection as soon as one becomes available.

(iv) For any employee who is medically removed under the provisions of (a) of this subsection, the employer shall provide follow-up biological monitoring in accordance with subsection (2)(b)(ii) of this section at least every three months and follow-up medical examinations semiannually at least every six months until in a written medical opinion the examining physician determines that either the employee may be returned to his/her former job status as specified under (d) through (e) of this subsection or the employee must be permanently removed from excess cadmium exposure.

(v) 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 opinion that continued medical removal is no longer necessary to protect the employee's health.

(b) Where an employee is found unfit to wear a respirator under subsection (6)(b) of this section, the employer shall remove the employee from work where exposure to cadmium is above the PEL.

(c) Where removal is based on 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.

(d) Except as specified in (e) of this subsection, no employee who was removed because his/her level of CdU, CdB and/or $ß_2$-M exceeded the medical removal trigger levels in subsection (3) or (4) of this section 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 falls to or below 5 µg/lwb, and $ß_2$-M falls to or below 300 µg/g Cr.

(e) 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, the returned employee shall continue to be provided with medical surveillance as if he/she were still on medical removal until the employee's levels of CdU fall to or below 3 µg/g Cr, CdB falls to or below 5 µg/lwb, and $ß_2$-M falls to or below 300 µg/g Cr.

(f) Where an employer, although not required by (a) through (c) of this subsection 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 subsection (12) of this section as would have been

provided had the removal been required under (a) through (c) of this subsection.

(12) Medical removal protection benefits (MRPB).

(a) The employer shall provide MRPB for up to a maximum of eighteen months to an employee each time and while the employee is temporarily medically removed under subsection (11) of this section.

(b) For purposes of this section, the requirement that the employer provide MRPB 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.

(c) Where, after eighteen 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:

(i) The employer shall make available to the employee a medical examination pursuant 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

(ii) 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.

(d) The employer may condition the provision of MRPB upon the employee's participation in medical surveillance provided in accordance with this section.

(13) Multiple physician review.

(a) 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:

(i) Review any findings, determinations, or recommendations of the initial physician; and

(ii) 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 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 days after receipt of this notice, or receipt of the initial physician's written opinion, whichever is later:

(i) Informing the employer that he or she intends to seek a medical opinion; and

(ii) 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 to:

(i) Review any findings, determinations, or recommendations of the other two physicians; and

(ii) 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.

(e) 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.

(14) Alternate physician determination. The employer and an employee or designated employee representative may agree upon the use of any alternate form of physician determination in lieu of the multiple physician review provided by subsection (13) of this section, so long as the alternative is expeditious and at least as protective of the employee.

(15) Information the employer must provide the employee.

(a) The employer shall provide a copy of the physician's written medical opinion to the examined employee within two weeks after receipt thereof.

(b) The employer shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results within two weeks after receipt thereof.

(c) Within thirty 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 subsection (9) of this section.

(16) 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 WAC 296-27-060.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07423, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07423, 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 CANCER 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 CANCER 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 respirators and 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; and

(viii) The employee's rights of access to records under WAC 296-62-05213.

(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: 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 296-62-07427 Recordkeeping.** (1) Exposure monitoring.

(a) The employer shall establish and keep an accurate record of all air monitoring for cadmium in the workplace.

(b) This record shall include at least the following information:

(i) The monitoring date, duration, and results in terms of an 8-hour TWA of each sample taken;

(ii) The name, Social Security number, and job classification of the employees monitored and of all other employees whose exposures the monitoring is intended to represent;

(iii) A description of the sampling and analytical methods used and evidence of their accuracy;

(iv) The type of respiratory protective device, if any, worn by the monitored employee;

(v) A notation of any other conditions that might have affected the monitoring results.

(c) The employer shall maintain this record for at least thirty years, in accordance with chapter 296-62 WAC, Part B.

(2) Objective data for exemption from requirement for initial monitoring.

(a) 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.

(b) The employer shall establish and maintain a record of the objective data for at least thirty years.

(3) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee covered by medical surveillance under WAC 296-62-07423 (1)(a).

(b) The record shall include at least the following information about the employee:

(i) Name, Social Security number, and description of the duties;

(ii) A copy of the physician's written opinions and an explanation sheet for biological monitoring results;

(iii) 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;

(iv) The employee's medical symptoms that might be related to exposure to cadmium; and

(v) A copy of the information provided to the physician as required by WAC 296-62-07423 (9)(b) through (e).

(c) The employer shall assure that this record is maintained for the duration of employment plus thirty years, in accordance with chapter 296-62 WAC, Part B.

(4) 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 year beyond the date of training of that employee.

(5) Availability.

(a) Except as otherwise provided for in this section, access to all records required to be maintained by subsections (1) through (4) of this section shall be in accordance with the provisions of chapter 296-62 WAC, Part B.

(b) Within fifteen days after a request, the employer shall make an employee's medical records required to be kept by subsection (3) of this section 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.

(6) Transfer of records. Whenever an employer ceases to do business and there is no successor employer to receive and retain records for the prescribed period or the employer intends to dispose of any records required to be preserved for at least thirty years, the employer shall comply with the requirements concerning transfer of records set forth in WAC 296-62-05215.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07427, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07429 Observation of monitoring.** (1) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to cadmium.

(2) 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.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07429, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07431 Dates.** (1) Effective date. This section shall become effective April 30, 1993.

(2) Start-up dates. All obligations of this section commence on the effective date except as follows:

(a) Exposure monitoring. Except for small businesses (nineteen or fewer employees), initial monitoring required by WAC 296-62-07407(2) shall be completed as soon as possible and in any event no later than sixty days after the effective date of this standard. For small businesses, initial monitoring required by WAC 296-62-07407(2) shall be completed as soon as possible and in any event no later than one hundred twenty days after the effective date of this standard.

(b) Regulated areas. Except for small business, defined under (a) of this subsection, regulated areas required to be established by WAC 296-62-07409 shall be set up as soon as possible after the results of exposure monitoring are known and in any event no later than ninety days after the effective date of this section. For small businesses, regulated areas required to be established by WAC 296-62-07409 shall be set up as soon as possible after the results of exposure monitoring are known and in any event no later than one hundred fifty days after the effective date of this section.

(c) Respiratory protection. Except for small businesses, defined under (a) of this subsection, respiratory protection required by WAC 296-62-07413 shall be provided as soon as possible and in any event no later than ninety days after the effective date of this section. For small businesses, respiratory protection required by WAC 296-62-07413 shall be provided as soon as possible and in any event no later than one hundred fifty days after the effective date of this section.

(d) Compliance program. Written compliance programs required by WAC 296-62-07411(2) shall be completed and available for inspection and copying as soon as possible and in any event no later than one year after the effective date of this section.

(e) Methods of compliance. The engineering controls required by WAC 296-62-07411(1) shall be implemented as soon as possible and in any event no later than two years after the effective date of this section. Work practice controls shall be implemented as soon as possible. Work practice controls that are directly related to engineering controls to be implemented in accordance with the compliance plan shall be implemented as soon as possible after such engineering controls are implemented.

(f) Hygiene and lunchroom facilities.

(i) Handwashing facilities, permanent or temporary, shall be provided in accordance with WAC 296-24-12009 as soon as possible and in any event no later than sixty days after the effective date of this section.

(ii) Change rooms, showers, and lunchroom facilities shall be completed as soon as possible and in any event no later than one year after the effective date of this section.

(g) Employee information and training. Except for small businesses, defined under (a) of this subsection, employee information and training required by WAC 296-62-07425(4) shall be provided as soon as possible and in any event no later than ninety days after the effective date of this standard. For small businesses, employee information and training required by WAC 296-62-07425(4) shall be provided as soon as possible and in any event no later than one hundred eighty days after the effective date of this standard.

(h) Medical surveillance. Except for small businesses, defined under (a) of this subsection, initial medical examinations required by WAC 296-62-07423 shall be provided as soon as possible and in any event no later than ninety days after the effective date of this standard. For small businesses, initial medical examinations required by WAC 296-62-07423 shall be provided as soon as possible and in any event no later than one hundred eighty days after the effective date of this standard.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07431, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07433 Appendices.** (1) WAC 296-62-07445, Appendix C is incorporated as part of this section, and compliance with its contents is mandatory.

(2) Except where portions of 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 expressly incorporated in requirements of WAC 296-62-07433, 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: 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 $\mu g/m^3$, 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 respirators are worn in the future, they must have a joint Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH) label of approval. 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 ($ß_2$-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 $ß_2$-M associated with cadmium exposure it is unlikely that $ß_2$-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 $ß_2$-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 ($ß_2$-M), a low molecular weight protein. Excess $ß_2$-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 $ß_2$-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 $ß_2$-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 µg Cd/gram creatinine in urine and 5 µgCd/liter whole blood, respectively. These levels were derived from broad-based population studies. Three issues confront the physicians in the use of $ß_2$-M as a marker of kidney dysfunction and material impairment. First, there are a few other causes of elevated levels of $ß_2$-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 $ß_2$-M to degrade so that low levels would result in workers with tubular dysfunction. For example, regarding the degradation of $ß_2$-M, workers with acidic urine (pH<6) might have $ß_2$-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 $ß_2$-M levels greater than 300 µg/g Cr are abnormal (Elinder, Ex. 55, Friberg, Ex. 29). Such levels signify kidney dysfunction that constitutes material impairment of health. Finally, detection of $ß_2$-M at low levels has often been considered difficult, however, many laboratories have the capability of detecting excess $ß_2$-M using simple kits, such as the Phadebas Delphia test, that are accurate to levels of 100 µg $ß_2$-M/g Cr U (Ex. L-140-1). Specific recommendations for ways to measure $ß_2$-M and proper handling of urine samples to prevent degradation of $ß_2$-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 ($ß_2$-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 ($ß_2$-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/m$^3$ 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/m$^3$ 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 mucocillary 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 ($ß_2$-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 µg/gram creatinine (g Cr), or CdB is greater than 15 µg/liter whole blood (lwb), or $ß_2$-M is greater than 1500 µg/g Cr, and CdB is greater than 5 µg/lwb or CdU is greater than 3 µg/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 $ß_2$-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 $ß_2$-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. |
| 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." Am. J. Ind. Med. 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", Brit. J. Ind. Med., 42, 651-655, 1985. |
| L-140-50 | Thun, M., Elinder, C.G., Friberg, L, "Scientific Basis for an Occupational Standard for Cadmium, Am. J. Ind. Med., 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

| | Monitoring result categories | | |
|---|---|---|---|
| Biological marker | A | B | C |
| Cadmium in urine (CdU) (μg/g creatinine) | ≤=3 | >3 and ≤=15 | >15 |
| $ß_2$-microglobulin ($ß_2$-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 $ß_2$-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 |
| $ß_2$-microglobulin ($ß_2$-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 $ß_2$-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

| Required actions | A[1] | B[1] | C[1] |
|---|---|---|---|
| (1) Biological monitoring: | | | |
| (a) Annual. | X | | |
| (b) Semiannual | | X | |
| (c) Quarterly | | | X |
| (2) Medical examination: | | | |
| (a) Biennial | X | | |
| (b) Annual. | | X | |
| (c) Semiannual. | | | X |
| (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: 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, sulfinpyrazone, 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 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 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: Chapter 49.17 RCW. 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 296-62-07443 Appendix B—Substance technical guidelines for cadmium.** (1) Cadmium metal.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium.

Formula: Cd.

Molecular Weight: 112.4.

Chemical Abstracts Service (CAS) Registry No.: 7740-43-9.

Other Identifiers: RETCS EU9800000; EPA D006; DOT 2570 53.

Synonyms: Colloidal Cadmium: Kadmium (German): CI 77180.

(ii) Physical data.

Boiling point: (760 mm Hg): 765 degrees C.

Melting point: 321 degrees C.

Specific Gravity: ($H_2O$=@ 20°C): 8.64.

Solubility: Insoluble in water; soluble in dilute nitric acid and in sulfuric acid.

Appearance: Soft, blue-white, malleable, lustrous metal or grayish-white powder.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: The finely divided metal is pyrophoric, that is the dust is a severe fire hazard and moderate explosion hazard when exposed to heat or flame. Burning material reacts violently with extinguishing agents such as water, foam, carbon dioxide, and halons.

Flash point: Flammable (dust).

Extinguishing media: Dry sand, dry dolomite, dry graphite, or sodium chloride.

(ii) Reactivity.

Conditions contributing to instability: Stable when kept in sealed containers under normal temperatures and pressure, but dust may ignite upon contact with air. Metal tarnishes in moist air.

(iii) Incompatibilities: Ammonium nitrate, fused: Reacts violently or explosively with cadmium dust below 20°C. Hydrozoic acid: Violent explosion occurs after thirty minutes. Acids: Reacts violently, forms hydrogen gas. Oxidizing agents or metals: Strong reaction with cadmium dust. Nitryl fluoride at slightly elevated temperature: Glowing or white incandescence occurs. Selenium: Reacts exothermically. Ammonia: Corrosive reaction. Sulfur dioxide: Corrosive reaction. Fire extinguishing agents (water, foam, carbon dioxide, and halons): Reacts violently. Tellurium: Incandescent reaction in hydrogen atmosphere.

(iv) Hazardous decomposition products: The heated metal rapidly forms highly toxic, brownish fumes of oxides of cadmium.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the materials is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. Do not get water inside container. For large spills, dike spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

(ii) The Superfund Amendments and Reauthorization Act of 1986 Section 304 requires that a release equal to or greater than the reportable quantity for this substance (one pound) must be immediately reported to the local emergency

planning committee, the state emergency response commission, and the National Response Center (800) 424-8802; in Washington, DC metropolitan area (202) 426-2675.

(2) Cadmium oxide.

(a) Physical and chemical date.

(i) Substance identification.

Chemical name: Cadmium oxide.

Formula: CdO.

Molecular Weight: 128.4.

CAS No.: 1306-19-0.

Other Identifiers: RTECS EV1929500.

Synonyms: Kadmu tlenek (Polish).

(ii) Physical data.

Boiling point (760 mm Hg): 950 degrees C decomposes.

Melting point: 1500°C.

Specific Gravity: ($H_2O$=1@20°C): 7.0.

Solubility: Insoluble in water; soluble in acids and alkalines.

Appearance: Red or brown crystals.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: Negligible fire hazard when exposed to heat or flame.

Flash point: Nonflammable.

Extinguishing media: Dry chemical, carbon dioxide, water spray or foam.

(ii) Reactivity.

Conditions contributing to instability: Stable under normal temperatures and pressures.

(iii) Incompatibilities: Magnesium may reduce $CdO_2$ explosively on heating.

(iv) Hazardous decomposition products: Toxic fumes of cadmium.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the material is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small dry spills, use a clean shovel to place material into clean, dry container and then cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

(ii) The Superfund Amendments and Reauthorization Act of 1986 Section 304 requires that a release equal to or greater than the reportable quantity for this substance (one pound) must be immediately reported to the local emergency planning committee, the state emergency response commission, and the National Response Center (800) 424-8802; in Washington, DC metropolitan area (202) 426-2675.

(3) Cadmium sulfide.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium sulfide.

Formula: CdS.

Molecular weight: 144.5.

CAS No. 1306-23-6.

Other identifiers: RTECS EV3150000.

Synonyms: Aurora yellow; Cadmium Golden 366; Cadmium Lemon Yellow 527; Cadmium Orange; Cadmium Primrose 819; Cadmium Sulphide; Cadmium Yellow; Cadmium Yellow 000; Cadmium Yellow Conc. Deep; Cadmium Yellow Conc. Golden; Cadmium Yellow Conc. Lemon; Cadmium Yellow Conc. Primrose; Cadmium Yellow Oz. Dark; Cadmium Yellow Primrose 47-1400; Cadmium Yellow 10G Conc.; Cadmium Yellow 892; Cadmopur Golden Yellow N; Cadmopur Yellow: Capsebon; C.I. 77199; C.I. Pigment Orange 20; CI Pigment Yellow 37; Ferro Lemon Yellow; Ferro Orange Yellow; Ferro Yellow; Greenockite; NCI-C02711.

(ii) Physical data.

Boiling point (760 mm. Hg): sublines in $N_2$ at 980°C.

Melting point: 1750 degrees C (100 atm).

Specific Gravity: ($H_2O$=1@ 20°C): 4.82.

Solubility: Slightly soluble in water; soluble in acid.

Appearance: Light yellow or yellow-orange crystals.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: Negligible fire hazard when exposed to heat or flame.

Flash point: Nonflammable.

Extinguishing media: Dry chemical, carbon dioxide, water spray or foam.

(ii) Reactivity. Conditions contributing to instability: Generally nonreactive under normal conditions. Reacts with acids to form toxic hydrogen sulfide gas.

(iii) Incompatibilities: Reacts vigorously with iodinemonochloride.

(iv) Hazardous decomposition products: Toxic fumes of cadmium and sulfur oxides.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the material is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. For small, dry spills, with a clean shovel place material into clean, dry container and cover. Move containers from spill area.

(ii) For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard and deny entry.

(4) Cadmium chloride.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium chloride.

Formula: $CdC1_2$.

Molecular weight: 183.3.

CAS No. 10108-64-2.

Other Identifiers: RTECS EY0175000.

Synonyms: Caddy; Cadmium dichloride; NA 2570 (DOT); UI-CAD; dichlorocadmium.

(ii) Physical data.

Boiling point (760 mm Hg): 960 degrees C.

Melting point: 568 degrees C.

Specific gravity: ($H_2O$=1 @ 20°C): 4.05.

Solubility: Soluble in water (140 g/100 cc); soluble in acetone.

Appearance: Small, white crystals.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: Negligible fire and negligible explosion hazard in dust form when exposed to heat or flame.

Flash point: Nonflammable.

Extinguishing media: Dry chemical, carbon dioxide, water spray, or foam.

(ii) Reactivity. Conditions contributing to instability: Generally stable under normal temperatures and pressures.

(iii) Incompatibilities: Bromine triflouride [trifluoride] rapidly attacks cadmium chloride. A mixture of potassium and cadmium chloride may produce a strong explosion on impact.

(iv) Hazardous decomposition products: Thermal decomposition may release toxic fumes of hydrogen chloride, chloride, chlorine or oxides of cadmium.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the materials is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. For small, dry spills, with a clean shovel place material into clean, dry container and cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard and deny entry.

(ii) The Superfund Amendments and Reauthorization Act of 1986 Section 304 requires that a release equal to or greater than the reportable quantity for this substance (one hundred pounds) must be immediately reported to the local emergency planning committee, the state emergency response commission, and the National Response Center (800) 424-8802; in Washington, DC Metropolitan area (202) 426-2675.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07443, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-07445 Appendix C—Qualitative and quantitative fit testing procedures—(Fit test protocols).** (1) General: The employer shall include the following provisions in the fit test procedures. These provisions apply to both qualitative fit testing (QLFT) and quantitative fit testing (QNFT). All testing is to be conducted annually.

(a) The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. The selection shall include at least three sizes of elastomeric facepieces of the type of respirator that is to be tested, i.e., three sizes of half mask; or three sizes of full facepiece. Respirators of each size must be provided from at least two manufacturers.

(b) Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a comfortable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning the respirator. This instruction may not constitute the subject's formal training on respirator use; it is only a review.

(c) The test subject shall be informed that he/she is being asked to select the respirator which provides the most comfortable fit. Each respirator represents a different size and shape, and if fitted, maintained and used properly, will provide substantial protection.

(d) The test subject shall be instructed to hold each facepiece up to the face and eliminate those which obviously do not give a comfortable fit.

(e) The more comfortable facepieces are noted; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in (f) of this subsection. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

(f) Assessment of comfort shall include reviewing the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:

(i) Position of the mask on the nose;

(ii) Room for eye protection;

(iii) Room to talk; and

(iv) Position of mask on face and cheeks.

(g) The following criteria shall be used to help determine the adequacy of the respirator fit:

(i) Chin properly placed;

(ii) Adequate strap tension, not overly tightened;

(iii) Fit across nose bridge;

(iv) Respirator of proper size to span distance from nose to chin;

(v) Tendency of respirator to slip; and

(vi) Self-observation in mirror to evaluate fit and respirator position.

(h) The test subject shall conduct the negative and positive pressure fit checks as described below or in ANSI Z88.2-1980. Before conducting the negative or positive pressure test, the subject shall 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 shall be selected and retested if the test subject fails the fit check tests.

(i) Positive pressure test. Close off the exhalation valve and exhale gently onto the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

(ii) Negative pressure test. 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 facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

(i) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, or long sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

(j) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory disease or pulmonary medicine to determine, in accordance with WAC 296-62-07423 (2) and (3), whether the test subject can wear a respirator while performing her or his duties.

(k) The test subject shall be given the opportunity to wear the successfully fitted respirator for a period of two weeks. If at any time during this period the respirator

becomes uncomfortable, the test subject shall be given the opportunity to select a different facepiece and to be retested.

(l) The employer shall maintain a record of the fit test administered to an employee. The record shall contain at least the following information:

(i) Name of employee;

(ii) Type of respirator;

(iii) Brand, size of respirator;

(iv) Date of test; and

(v) Where QNFT is used, the fit factor and strip chart recording or other recording of the results of the test. The record shall be maintained until the next fit test is administered.

(m) Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least five minutes before the start of the fit test.

(n) Test exercises. The test subject shall perform exercises, in the test environment, in the manner described below:

(i) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(ii) Deep breathing. In a normal standing position, without talking, the subject shall breathe slowly and deeply, taking care so as to not hyperventilate.

(iii) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(iv) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(v) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from one hundred, or recite a memorized poem or song.

(vi) Grimace. The test subject shall grimace by smiling or frowning.

(vii) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT units which prohibit bending at the waist.

(viii) Normal breathing. Same as exercise one. Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for fifteen seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become uncomfortable, another model of respirator shall be tried.

(2) Qualitative fit test (QLFT) protocols.

(a) General.

(i) The employer shall assign specific individuals who shall assume full responsibility for implementing the respirator qualitative fit test program.

(ii) The employer shall assure that persons administering QLFTs are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and assure that test equipment is in proper working order.

(iii) The employer shall assure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

(b) Isoamyl acetate protocol.

(i) Odor threshold screening. The odor threshold screening test, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate.

(A) Three one-liter glass jars with metal lids are required.

(B) Odor free water (e.g., distilled or spring water) at approximately twenty-five degrees C shall be used for the solutions.

(C) The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 cc of pure IAA to 800 cc of odor free water in a one-liter jar and shaking for thirty seconds. A new solution shall be prepared at least weekly.

(D) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated and shall not be connected to the same recirculating ventilation system.

(E) The odor test solution is prepared in a second jar by placing 0.4 cc of the stock solution into 500 cc of odor free water using a clean dropper or pipette. The solution shall be shaken for thirty seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

(F) A test blank shall be prepared in a third jar by adding 500 cc of odor free water.

(G) The odor test and test blank jars shall be labeled 1 and 2 for jar identification. Labels shall be placed on the lids so they can be periodically peeled, dried off and switched to maintain the integrity of the test.

(H) The following instruction shall be typed on a card and placed 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."

(I) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(J) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

(K) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(ii) Isoamyl acetate fit test.

(A) The fit test chamber shall be similar to a clear fifty-five-gallon drum liner suspended inverted over a two-foot diameter frame so that the top of the chamber is about six inches above the test subject's head. The inside top center of the chamber shall have a small hook attached.

(B) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors. The cartridges or masks shall be changed at least weekly.

(C) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(D) A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

(E) Upon entering the test chamber, the test subject shall be given a six-inch by five-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 cc of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber.

(F) 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 test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the head exercises; and to demonstrate some of the exercises.

(G) If at any time during the test, the subject detects the banana like odor of IAA, the respirator fit is inadequate. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(H) If the respirator fit was inadequate, the subject shall return to the selection room and remove the respirator, repeat the odor sensitivity test, select and put on another respirator, return to the test chamber and again begin the procedure described in (b)(ii)(A) through (G) of this subsection. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait about five minutes before retesting. Odor sensitivity will usually have returned by this time.

(I) When a respirator is found that passes the test, its efficiency shall be demonstrated for the subject by having the subject break the face seal and take a breath before exiting the chamber.

(J) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test. To keep the test area from becoming contaminated, the used towels shall be kept in a self sealing bag so there is no significant IAA concentration build-up in the test chamber during subsequent tests.

(c) Irritant fume protocol.

(i) The respirator to be tested shall be equipped with high-efficiency particulate air (HEPA) filters.

(ii) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its characteristic odor.

(iii) Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA part No. 5645, or equivalent. Attach one end of the smoke tube to a low flow air pump set to deliver two hundred milliliters per minute.

(iv) Advise the test subject that the smoke can be irritating to the eyes and instruct the subject to keep his/her eyes closed while the test is performed.

(v) The test conductor shall direct the stream of irritant smoke from the smoke tube towards the face seal area of the test subject. He/she shall begin at least twelve inches from the facepiece and gradually move to within one inch, moving around the whole perimeter of the mask.

(vi) The exercises identified in subsection (1)(n) of this section shall be performed by the test subject while the respirator seal is being challenged by the smoke.

(vii) Each test subject passing the smoke test without evidence of a response shall be given a sensitivity check of the smoke from the same tube once the respirator has been removed to determine whether he/she reacts to the smoke. Failure to evoke a response shall void the fit test.

(viii) The fit test shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agent.

(d) Saccharin solution aerosol protocol.

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(i) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(A) Threshold screening as well as fit testing subjects shall wear an enclosure about 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 shall have a 3/4-inch hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(C) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her wide open mouth with tongue extended.

(D) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer the test conductor shall spray the threshold check solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(E) The threshold check solution consists of 0.83 grams of sodium saccharin USP in warm water. It can be prepared by putting 1 cc of the fit test solution (see (ii)(E) below) in 100 cc of distilled water.

(F) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(G) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted.

(H) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted.

(I) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted.

(J) The test conductor will take note of the number of squeezes required to solicit a taste response.

(K) If the saccharin is not tasted after 30 squeezes (step (J)), the test subject may not perform the saccharin fit test.

(L) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(M) Correct use of the nebulizer means that approximately 1 cc of liquid is used at a time in the nebulizer body.

(N) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(ii) Saccharin solution aerosol fit test procedure.

(A) The test subject may not eat, drink (except plain water), or chew gum for 15 minutes before the test.

(B) The fit test uses the same enclosure described in (i) above.

(C) The test subject shall don the enclosure while wearing the respirator selected in (1)(a) of this section. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(D) A second DeVilbiss Model 40 Inhalation Medication Nebulizer is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(E) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 cc of warm water.

(F) As before, the test subject shall breathe through the open mouth with tongue extended.

(G) The nebulizer is inserted into the hole in the front of the enclosure and the fit test solution is sprayed into the enclosure using the same number of squeezes required to elicit a taste response in the screening test.

(H) After generating the aerosol the test subject shall be instructed to perform the exercises in (1)(n) of this section.

(I) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes as initially.

(J) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected.

(K) If the taste of saccharin is detected, the fit is deemed unsatisfactory and a different respirator shall be tried.

(3) Quantitative fit test (QNFT) protocol.

(a) General.

(i) The employer shall assign specific individuals who shall assume full responsibility for implementing the respirator quantitative fit test program.

(ii) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and assure that test equipment is in proper working order.

(iii) The employer shall assure that QNFT equipment is kept clean and well maintained so as to operate at the parameters for which it was designed.

(b) Definitions.

(i) Quantitative fit test. The test is performed in a test chamber. The normal air-purifying element of the respirator is replaced by a high-efficiency particulate air (HEPA) filter in the case of particulate QNFT aerosols or a sorbent offering contaminant penetration protection equivalent to high-efficiency filters where the QNFT test agent is a gas or vapor.

(ii) Challenge agent means the aerosol, gas or vapor introduced into a test chamber so that its concentration inside and outside the respirator may be measured.

(iii) Test subject means the person wearing the respirator for quantitative fit testing.

(iv) Normal standing position means standing erect and straight with arms down along the sides and looking straight ahead.

(v) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.

(vi) Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers which calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.

(vii) "Fit factor" means the ration of challenge agent concentration outside with respect to the inside of a respirator inlet covering (facepiece or enclosure).

(c) Apparatus

(i) Instrumentation. Aerosol generation, dilution, and measurement systems using corn oil or sodium chloride as test aerosols shall be used for quantitative fit testing.

(ii) Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the challenge agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the challenge agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(iii) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high-efficiency particulate filter supplied by the same manufacturer.

(iv) The sampling instrument shall be selected so that a strip chart record may be made of the test showing the rise and fall of the challenge agent concentration with each inspiration and expiration at fit factors of at least two thousand. Integrators or computers which 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.

(v) The combination of substitute air-purifying elements, challenge agent and challenge agent concentration in the test chamber shall be such that the test subject is not exposed in excess of an established exposure limit for the challenge agent at any time during the testing process.

(vi) The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times and so

that there is no interference with the fit or performance of the respirator.

(vii) The test chamber and test set up shall permit the person administering the test to observe the test subject inside the chamber during the test.

(viii) The equipment generating the challenge atmosphere shall maintain the concentration of challenge agent inside the test chamber constant to within a ten percent variation for the duration of the test.

(ix) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event inside the test chamber and its being recorded.

(x) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.

(xi) The exhaust flow from the test chamber shall pass through a high-efficiency filter before release.

(xii) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed fifty percent.

(xiii) The limitations of instrument detection shall be taken into account when determining the fit factor.

(xiv) Test respirators shall be maintained in proper working order and inspected for deficiencies such as cracks, missing valves and gaskets, etc.

(d) Procedural requirements.

(i) When performing the initial positive or negative pressure test the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these tests.

(ii) An abbreviated screening isoamyl acetate test or irritant fume test may be utilized in order to quickly identify poor fitting respirators which passed the positive and/or negative pressure test and thus reduce the amount of QNFT time. When performing a screening isoamyl acetate test, combination high-efficiency organic vapor cartridges/canisters shall be used.

(iii) A reasonably stable challenge agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain type of test units the determination of the challenge agent stability may be established after the test subject has entered the test environment.

(iv) Immediately after the subject enters the test chamber, the challenge agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed five percent for a half mask or one percent for a full facepiece respirator.

(v) A stable challenge concentration shall be obtained prior to the actual start of testing.

(vi) Respirator restraining straps shall not be overtightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonable comfortable fit typical of normal use.

(vii) The test shall be terminated whenever any single peak penetration exceeds five percent for half masks and one percent for full facepiece respirators. The test subject shall be refitted and retested. If two of the three required tests are terminated, the fit shall be deemed inadequate.

(viii) In order to successfully complete a QNFT, three successful fit tests are required. The results of each of the three independent fit tests must exceed the minimum fit factor needed for the class of respirator (e.g., half mask respirator, full facepiece respirator).

(ix) Calculation of fit factors.

(A) The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration inside the respirator.

(B) The average test chamber concentration is the arithmetic average of the test chamber concentration at the beginning and at the end of the test.

(C) The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:

(I) Average peak concentration;

(II) Maximum peak concentration;

(III) Integration by calculation of the area under the individual peak for each exercise. This includes computerized integration.

(x) Interpretation of test results. The fit factor established by the quantitative fit testing shall be the lowest of the three fit factor values calculated from the three required fit tests.

(xi) The test subject shall not be permitted to wear a half mask, or full facepiece respirator unless a minimum fit factor equivalent to at least ten times the hazardous exposure level is obtained.

(xii) Filters used for quantitative fit testing shall be replaced at least weekly, or whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media. Organic vapor cartridges/canisters shall be replaced daily (when used) or sooner if there is any indication of breakthrough by a test agent.

[Statutory Authority: Chapter 49.17 RCW. 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.]

### WAC 296-62-07447 Appendix D—Occupational health history interview with reference to cadmium exposure directions.

(To be read by employee and signed prior to the interview.)

Please answer the questions you will be asked as completely and carefully as you can. These questions are asked of everyone who works with cadmium. You will also be asked to give blood and urine samples. The doctor will give your employer a written opinion on whether you are physically capable of working with cadmium. Legally, the doctor cannot share personal information you may tell him/her with your employer. The following information is considered strictly confidential. The results of the tests will go to you, your doctor and your employer. You will also receive an information sheet explaining the results of any biological monitoring or physical examinations performed. If you are just being hired, the results of this interview and examination will be used to:

(1) Establish your health status and see if working with cadmium might be expected to cause unusual problems;

(2) Determine your health status today and see if there are changes over time;

(3) See if you can wear a respirator safely. If you are not a new hire: WISHA says that everyone who works with cadmium can have periodic medical examinations performed by a doctor. The reasons for this are:

(a) If there are changes in your health, either because of cadmium or some other reason, to find them early;

(b) To prevent kidney damage.

Please sign below.

I have read these directions and understand them:

Employee signature

Date

Thank you for answering these questions. (Suggested Format)

Name . . . . . .
Age . . . . . .
Social Security # . . . . . .
Company . . . . . .
Job . . . . . .
Type of Preplacement Exam: [ ] Periodic [ ] Termination [ ] Initial [ ] Other
Blood Pressure . . . . . .
Pulse Rate . . . . . .

1. How long have you worked at the job listed above?
[ ] Not yet hired [ ] Number of months [ ] Number of years

2. Job Duties etc.
. . . . . .
. . . . . .

3. Have you ever been told by a doctor that you had bronchitis? [ ] Yes [ ] No
If yes, how long ago? [ ] Number of months [ ] Number of years

4. Have you ever been told by a doctor that you had emphysema?
[ ] Yes [ ] No
If yes, how long ago? [ ] Number of years [ ] Number of months

5. Have you ever been told by a doctor that you had other lung problems?
[ ] Yes [ ] No
If yes, please describe type of lung problems and when you had these problems
. . . . . .
. . . . . .

6. In the past year, have you had a cough? [ ] Yes [ ] No
If yes, did you cough up sputum? [ ] Yes [ ] No
If yes, how long did the cough with sputum production last?
[ ] Less than 3 months [ ] 3 months or longer
If yes, for how many years have you had episodes of cough with sputum production lasting this long?
[ ] Less than one [ ] 1 [ ] 2 [ ] Longer than 2

7. Have you ever smoked cigarettes? [ ] Yes [ ] No

8. Do you now smoke cigarettes? [ ] Yes [ ] No

9. If you smoke or have smoked cigarettes, for how many years have you smoked, or did you smoke?
[ ] Less than 1 year [ ] Number of years
What is or was the greatest number of packs per day that you have smoked?
[ ] Number of packs
If you quit smoking cigarettes, how many years ago did you quit?
[ ] Less than 1 year [ ] Number of years
How many packs a day do you now smoke? [ ] Number of packs per day

10. Have you ever been told by a doctor that you had a kidney or urinary tract disease or disorder? [ ] Yes [ ] No

11. Have you ever had any of these disorders?

| | |
|---|---|
| Kidney stones | [ ] Yes [ ] No |
| Protein in urine | [ ] Yes [ ] No |
| Blood in urine | [ ] Yes [ ] No |
| Difficulty urinating | [ ] Yes [ ] No |
| Other kidney/Urinary disorders | [ ] Yes [ ] No |

Please describe problems, age, treatment, and follow up for any kidney or urinary problems you have had:
. . . . . .
. . . . . .

12. Have you ever been told by a doctor or other health care provider who took your blood pressure that your blood pressure was high? [ ] Yes [ ] No

13. Have you ever been advised to take any blood pressure medication?
[ ] Yes [ ] No

14. Are you presently taking any blood pressure medication? [ ] Yes [ ] No

15. Are you presently taking any other medication? [ ] Yes [ ] No

16. Please list any blood pressure or other medications and describe how long you have been taking each one:
Medicine:
. . . . . .
. . . . . .
. . . . . .
How Long Taken
. . . . . .
. . . . . .
. . . . . .

17. Have you ever been told by a doctor that you have diabetes? (sugar in your blood or urine) [ ] Yes [ ] No
If yes, do you presently see a doctor about your diabetes? [ ] Yes [ ] No
If yes, how do you control your blood sugar? [ ] Diet alone
[ ] Diet plus oral medicine [ ] Diet plus insulin (injection)

18. Have you ever been told by a doctor that you had:
Anemia [ ] Yes [ ] No A low blood count? [ ] Yes [ ] No

19. Do you presently feel that you tire or run out of energy sooner than normal or sooner than other people your age? [ ] Yes [ ] No
If yes, for how long have you felt that you tire easily? [ ] Less than 1 year
[ ] Number of years

20. Have you given blood within the last year? [ ] Yes [ ] No
If yes, how many times? [ ] Number of times
How long ago was the last time you gave blood? [ ] Less than 1 month
[ ] Number of months

21. Within the last year have you had any injuries with heavy bleeding?
[ ] Yes [ ] No
If yes, how long ago? [ ] Less than 1 month [ ] Number of months describe: . . . . . .
. . . . . .
. . . . . .
. . . . . .

22. Have you recently had any surgery? [ ] Yes [ ] No If yes, please describe:
. . . . . .
. . . . . .
. . . . . .

23. Have you seen any blood lately in your stool or after a bowel movement?
[ ] Yes [ ] No

24. Have you ever had a test for blood in your stool? [ ] Yes [ ] No
If yes, did the test show any blood in the stool? [ ] Yes [ ] No
What further evaluation and treatment were done? . . . . . .
. . . . . .
. . . . . .

The following questions pertain to the ability to wear a respirator. Additional information for the physician can be found in The Respiratory Protective Devices Manual.

25. Have you ever been told by a doctor that you have asthma? [ ] Yes [ ] No
If yes, are you presently taking any medication for asthma?
Mark all that apply. [ ] Shots [ ] Pills [ ] Inhaler

26. Have you ever had a heart attack? [ ] Yes [ ] No
If yes, how long ago? [ ] Number of years [ ] Number of months

27. Have you ever had pains in your chest? [ ] Yes [ ] No
If yes, when did it usually happen? [ ] While resting [ ] While working
[ ] While exercising [ ] Activity didn't matter

28. Have you ever had a thyroid problem? [ ] Yes [ ] No

29. Have you ever had a seizure or fits? [ ] Yes [ ] No

30. Have you ever had a stroke (cerebrovascular accident)? [ ] Yes [ ] No

31. Have you ever had a ruptured eardrum or a serious hearing problem?
[ ] Yes [ ] No

32. Do you now have a claustrophobia, meaning fear of crowded or closed in spaces or any psychological problems that would make it hard for you to wear a respirator? [ ] Yes [ ] No

The following questions pertain to reproductive history.

33. Have you or your partner had a problem conceiving a child?
[ ] Yes [ ] No
If yes, specify: [ ] Self [ ] Present mate [ ] Previous mate

34. Have you or your partner consulted a physician for a fertility or other reproductive problem? [ ] Yes [ ] No
If yes, specify who consulted the physician: [ ] Self [ ] Spouse/partner
[ ] Self and partner
If yes, specify diagnosis made: . . . . . .
. . . . . .

35. Have you or your partner ever conceived a child resulting in a miscarriage, still birth or deformed offspring?
[ ] Yes [ ] No
If yes, specify: [ ] Miscarriage [ ] Still birth [ ] Deformed offspring
If outcome was a deformed offspring, please specify type: . . . . . .
. . . . . .
. . . . . .

36. Was this outcome a result of a pregnancy of: [ ] Yours with present partner [ ] Yours with a previous partner
37. Did the timing of any abnormal pregnancy outcome coincide with present employment? [ ] Yes [ ] No
List dates of occurrences: .....
38. What is the occupation of your spouse or partner?
.....

For Women Only
39. Do you have menstrual periods? [ ] Yes [ ] No
Have you had menstrual irregularities? [ ] Yes [ ] No
If yes, specify type: .....
.....
.....
If yes, what was the approximated date this problem began? .....
Approximate date problem stopped? .....

For Men Only
40. Have you ever been diagnosed by a physician as having prostate gland problem(s)? [ ] Yes [ ] No
If yes, please describe type of problem(s) and what was done to evaluate and treat the problem(s): .....
.....
.....
.....

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07447, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07447, filed 3/13/93, effective 4/27/93.]

## WAC 296-62-07449 Appendix E—Cadmium in workplace atmospheres.

Method number: ID-189 (OSHA); (ICP/MS) 0009 (WISHA)

Matrix: Air

WISHA permissible exposure limits: 5 μg/m$^3$ (TWA), 2.5 μg/m$^3$ (action level TWA)

Collection procedure: A known volume of air is drawn through a 37-mm diameter filter cassette containing a 0.8 μm mixed cellulose ester membrane filter (MCEF).

Recommended air volume: 960 L

Recommended sampling rate: 2.0 L/min

Analytical procedure: Air filter samples are digested with nitric acid. After digestion, a small amount of hydrochloric acid is added. The samples are then diluted to volume with deionized water and analyzed by either flame atomic absorption spectroscopy (AAS) or flameless atomic absorption spectroscopy using a heated graphite furnace atomizer (AAS-HGA).

Detection limits:

Qualitative: 0.2 μg/m$^3$ for a 200 L sample by Flame AAS, 0.007 μg/m$^3$ for a 60 L sample by AAS-HGA

Quantitative: 0.70 μg/m$^3$ for a 200 L sample by Flame AAS, 0.025 μg/m$^3$ for a 60 L sample by AAS-HGA

Precision and accuracy: (Flame AAS Analysis and AAS-HGA Analysis):

Validation level: 2.5 to 10 μg/m$^3$ for a 400 L air vol, 1.25 to 5.0 μg/m$^3$ for a 60 L air vol CV1 (pooled): 0.010, 0.043

Analytical bias: +4.0%, -5.8%

Overall analytical error: ±6.0%, ±14.2%

Method classification: Validated Date: June, 1992

Inorganic Service Branch II, OSHA Salt Lake Technical Center, Salt Lake City, Utah Commercial manufacturers and products mentioned in this method are for descriptive use only and do not constitute endorsements by USDOL-OSHA. Similar products from other sources can be substituted.

(1) Introduction.

(a) Scope.

This method describes the collection of airborne elemental cadmium and cadmium compounds on 0.8 μm mixed cellulose ester membrane filters and their subsequent analysis by either flame atomic absorption spectroscopy (AAS) or flameless atomic absorption spectroscopy using a heated graphite furnace atomizer (AAS-HGA). It is applicable for both TWA and action level TWA permissible exposure level (PEL) measurements. The two atomic absorption analytical techniques included in the method do not differentiate between cadmium fume and cadmium dust samples. They also do not differentiate between elemental cadmium and its compounds.

(b) Principle.

Airborne elemental cadmium and cadmium compounds are collected on a 0.8 μm mixed cellulose ester membrane filter (MCEF). The air filter samples are digested with concentrated nitric acid to destroy the organic matrix and dissolve the cadmium analytes. After digestion, a small amount of concentrated hydrochloric acid is added to help dissolve other metals which may be present. The samples are diluted to volume with deionized water and then aspirated into the oxidizing air/acetylene flame of an atomic absorption spectrophotometer for analysis of elemental cadmium. If the concentration of cadmium in a sample solution is too low for quantitation by this flame AAS analytical technique, and the sample is to be averaged with other samples for TWA calculations, aliquots of the sample and a matrix modifier are later injected onto a L'vov platform in a pyrolytically-coated graphite tube of a Zeeman atomic absorption spectrophotometer/graphite furnace assembly for analysis of elemental cadmium. The matrix modifier is added to stabilize the cadmium metal and minimize sodium chloride as an interference during the high temperature charring step of the analysis subsection (5)(a) and (b) of this section.

(c) History.

Previously, two OSHA sampling and analytical methods for cadmium were used concurrently WAC 296-62-07449 (5)(c) and (d). Both of these methods also required 0.8 μm mixed cellulose ester membrane filters for the collection of air samples. These cadmium air filter samples were analyzed by either flame atomic absorption spectroscopy (subsection (5)(c) of this section) or inductively coupled plasma/atomic emission spectroscopy (ICP-AES) (subsection (5)(d) of this section). Neither of these two analytical methods have adequate sensitivity for measuring workplace exposure to airborne cadmium at the new lower TWA and action level TWA PEL levels when consecutive samples are taken on one employee and the sample results need to be averaged with other samples to determine a single TWA. The inclusion of two atomic absorption analytical techniques in the new sampling and analysis method for airborne cadmium permits quantitation of sample results over a broad range of exposure levels and sampling periods. The flame AAS analytical technique included in this method is similar to the previous procedure given in the General Metals Method ID-121 (subsection (5)(c) of this section) with some modifications. The sensitivity of the AAS-HGA analytical technique included in this method is adequate to measure exposure levels at 1/10 the action level TWA, or lower,

when less than full-shift samples need to be averaged together.

(d) Properties (subsection (5)(e) of this section).

Elemental cadmium is a silver-white, blue-tinged, lustrous metal which is easily cut with a knife. It is slowly oxidized by moist air to form cadmium oxide. It is insoluble in water, but reacts readily with dilute nitric acid. Some of the physical properties and other descriptive information of elemental cadmium are given below:

| | |
|---|---|
| CAS No | 7440-43-9 |
| Atomic Number | 48 |
| Atomic Symbol | Cd |
| Atomic Weight | 112.41 |
| Melting Point | 321°C |
| Boiling Point | 765°C |
| Density | 8.65 g/mL (25°C) |

The properties of specific cadmium compounds are described in reference subsection (5)(e) of this section.

(e) Method performance.

A synopsis of method performance is presented below. Further information can be found in subsection (4) of this section.

(i) The qualitative and quantitative detection limits for the flame AAS analytical technique are 0.04 µg (0.004 µg/mL) and 0.14 µg (0.014 µg/mL) cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.2 µg/m$^3$ and 0.70 µg/m$^3$ for a 200 L air volume.

(ii) The qualitative and quantitative detection limits for the AAS-HGA analytical technique are 0.44 ng (0.044 ng/mL) and 1.5 ng (0.15 ng/mL) cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.007 µg/m$^3$ and 0.025 µg/m$^3$ for a 60 L air volume.

(iii) The average recovery by the flame AAS analytical technique of 17 spiked MCEF samples containing cadmium in the range of 0.5 to 2.0 times the TWA target concentration of 5 µg/m$^3$ (assuming a 400 L air volume) was 104.0% with a pooled coefficient of variation (CV[1]) of 0.010. The flame analytical technique exhibited a positive bias of +4.0% for the validated concentration range. The overall analytical error (OAE) for the flame AAS analytical technique was ±6.0%.

(iv) The average recovery by the AAS-HGA analytical technique of 18 spiked MCEF samples containing cadmium in the range of 0.5 to 2.0 times the action level TWA target concentration of 2.5 µg/m$^3$ (assuming a 60 L air volume) was 94.2% with a pooled coefficient of variation (CV[1]) of 0.043. The AAS-HGA analytical technique exhibited a negative bias of -5.8% for the validated concentration range. The overall analytical error (OAE) for the AAS-HGA analytical technique was ±14.2%.

(v) Sensitivity in flame atomic absorption is defined as the characteristic concentration of an element required to produce a signal of 1% absorbance (0.0044 absorbance units). Sensitivity values are listed for each element by the atomic absorption spectrophotometer manufacturer and have proved to be a very valuable diagnostic tool to determine if instrumental parameters are optimized and if the instrument is performing up to specification. The sensitivity of the spectrophotometer used in the validation of the flame AAS analytical technique agreed with the manufacturer specifications (subsection (5)(f) of this section); the 2 µg/mL cadmium standard gave an absorbance reading of 0.350 abs. units.

(vi) Sensitivity in graphite furnace atomic absorption is defined in terms of the characteristic mass, the number of picograms required to give an integrated absorbance value of 0.0044 absorbance-second (subsection (5)(g) of this section). Data suggests that under stabilized temperature platform furnace (STPF) conditions (see (f)(ii) of this subsection), characteristic mass values are transferable between properly functioning instruments to an accuracy of about twenty percent (subsection (5)(b) of this section). The characteristic mass for STPF analysis of cadmium with Zeeman background correction listed by the manufacturer of the instrument used in the validation of the AAS-HGA analytical technique was 0.35 pg. The experimental characteristic mass value observed during the determination of the working range and detection limits of the AAS-HGA analytical technique was 0.41 pg.

(f) Interferences.

(i) High concentrations of silicate interfere in determining cadmium by flame AAS (subsection (5)(f) of this section). However, silicates are not significantly soluble in the acid matrix used to prepare the samples.

(ii) Interferences, such as background absorption, are reduced to a minimum in the AAS-HGA analytical technique by taking full advantage of the stabilized temperature platform furnace (STPF) concept. STPF includes all of the following parameters (subsection (5)(b) of this section):

(A) Integrated absorbance;

(B) Fast instrument electronics and sampling frequency;

(C) Background correction;

(D) Maximum power heating;

(E) Atomization off the L'vov platform in a pyrolytically coated graphite tube;

(F) Gas stop during atomization;

(G) Use of matrix modifiers.

(g) Toxicology (subsection (5)(n) of this section).

Information listed within this section is synopsis of current knowledge of the physiological effects of cadmium and is not intended to be used as the basis for WISHA policy. IARC classifies cadmium and certain of its compounds as Group 2A carcinogens (probably carcinogenic to humans). Cadmium fume is intensely irritating to the respiratory tract. Workplace exposure to cadmium can cause both chronic and acute effects. Acute effects include tracheobronchitis, pneumonitis, and pulmonary edema. Chronic effects include anemia, rhinitis/anosmia, pulmonary emphysema, proteinuria and lung cancer. The primary target organs for chronic disease are the kidneys (noncarcinogenic) and the lungs (carcinogenic).

(2) Sampling.

(a) Apparatus.

(i) Filter cassette unit for air sampling: A 37-mm diameter mixed cellulose ester membrane filter with a pore size of 0.8 µm contained in a 37-mm polystyrene two- or three-piece cassette filter holder (part no. MAWP 037 A0, Millipore Corp., Bedford, MA). The filter is supported with a cellulose backup pad. The cassette is sealed prior to use with a shrinkable gel band.

(ii) A calibrated personal sampling pump whose flow is determined to an accuracy of ±5% at the recommended flow rate with the filter cassette unit in line.

(b) Procedure

(i) Attach the prepared cassette to the calibrated sampling pump (the backup pad should face the pump) using flexible tubing. Place the sampling device on the employee such that air is sampled from the breathing zone.

(ii) Collect air samples at a flow rate of 2.0 L/min. If the filter does not become overloaded, a full-shift (at least seven hours) sample is strongly recommended for TWA and action level TWA measurements with a maximum air volume of 960 L. If overloading occurs, collect consecutive air samples for shorter sampling periods to cover the full workshift.

(iii) Replace the end plugs into the filter cassettes immediately after sampling. Record the sampling conditions.

(iv) Securely wrap each sample filter cassette end-to-end with a sample seal.

(v) Submit at least one blank sample. With each set of air samples. The blank sample should be handled the same as the other samples except that no air is drawn through it.

(vi) Ship the samples to the laboratory for analysis as soon as possible in a suitable container designed to prevent damage in transit.

(3) Analysis.

(a) Safety precautions.

(i) Wear safety glasses, protective clothing and gloves at all times.

(ii) Handle acid solutions with care. Handle all cadmium samples and solutions with extra care (see subsection (1)(g) of this section). Avoid their direct contact with work area surfaces, eyes, skin and clothes. Flush acid solutions which contact the skin or eyes with copious amounts of water.

(iii) Perform all acid digestions and acid dilutions in an exhaust hood while wearing a face shield. To avoid exposure to acid vapors, do not remove beakers containing concentrated acid solutions from the exhaust hood until they have returned to room temperature and have been diluted or emptied.

(iv) Exercise care when using laboratory glassware. Do not use chipped pipets, volumetric flasks, beakers or any glassware with sharp edges exposed in order to avoid the possibility of cuts or abrasions.

(v) Never pipet by mouth.

(vi) Refer to the instrument instruction manuals and SOPs (subsection (5)(h) and (i) of this section) for proper and safe operation of the atomic absorption spectrophotometer, graphite furnace atomizer and associated equipment.

(vii) Because metallic elements and other toxic substances are vaporized during AAS flame or graphite furnace atomizer operation, it is imperative that an exhaust vent be used. Always ensure that the exhaust system is operating properly during instrument use.

(b) Apparatus for sample and standard preparation.

(i) Hot plate, capable of reaching 150°C, installed in an exhaust hood.

(ii) Phillips beakers, 125 mL.

(iii) Bottles, narrow-mouth, polyethylene or glass with leakproof caps: used for storage of standards and matrix modifier.

(iv) Volumetric flasks, volumetric pipets, beakers and other associated general laboratory glassware.

(v) Forceps and other associated general laboratory equipment.

(c) Apparatus for flame AAS analysis.

(i) Atomic absorption spectrophotometer consisting of a(an):

Nebulizer and burner head; pressure regulating devices capable of maintaining constant oxidant and fuel pressures; optical system capable of isolating the desired wavelength of radiation (228.8 nm); adjustable slit; light measuring and amplifying device; display, strip chart, or computer interface for indicating the amount of absorbed radiation; cadmium hollow cathode lamp or electrodeless discharge lamp (EDL) and power supply.

(ii) Oxidant: Compressed air, filtered to remove water, oil and other foreign substances.

(iii) Fuel: Standard commercially available tanks of acetylene dissolved in acetone; tanks should be equipped with flash arresters.

**Caution**: Do not use grades of acetylene containing solvents other than acetone because they may damage the PVC tubing used in some instruments.

(iv) Pressure-reducing valves: Two gauge, two-stage pressure regulators to maintain fuel and oxidant pressures somewhat higher than the controlled operating pressures of the instrument.

(v) Exhaust vent installed directly above the spectrophotometer burner head.

(d) Apparatus for AAS-HGA analysis.

(i) Atomic absorption spectrophotometer consisting of a(an):

Heated graphite furnace atomizer (HGA) with argon purge system pressure-regulating devices capable of maintaining constant argon purge pressure; optical system capable of isolating the desired wavelength of radiation (228.8 nm); adjustable slit; light measuring and amplifying device; display, strip chart, or computer interface for indicating the amount of absorbed radiation (as integrated absorbance, peak area); background corrector: Zeeman or deuterium arc. The Zeeman background corrector is recommended; cadmium hollow cathode lamp or electrodeless discharge lamp (EDL) and power supply; autosampler capable of accurately injecting 5 to 20 µL sample aliquots onto the L'vov Platform in a graphite tube.

(ii) Pyrolytically coated graphite tubes containing solid, pyrolytic L'vov platforms.

(iii) Polyethylene sample cups, 2.0 to 2.5 mL, for use with the autosampler.

(iv) Inert purge gas for graphite furnace atomizer: Compressed gas cylinder of purified argon.

(v) Two gauge, two-stage pressure regulator for the argon gas cylinder.

(vi) Cooling water supply for graphite furnace atomizer.

(vii) Exhaust vent installed directly above the graphite furnace atomizer.

(e) Reagents. All reagents should be ACS analytical reagent grade or better.

(i) Deionized water with a specific conductance of less than 10 µS.

(ii) Concentrated nitric acid, $HNO_3$.

(iii) Concentrated hydrochloric acid, HCl.

(iv) Ammonium phosphate, monobasic, $NH_4H_2PO_4$.

(v) Magnesium nitrate, $Mg(NO_3)_2 \cdot 6H_2O$.

(vi) Diluting solution (4% $HNO_3$, 0.4% HCl): Add 40 mL $HNO_3$ and 4 mL HCl carefully to approximately 500 mL deionized water and dilute to 1 L with deionized water.

(vii) Cadmium standard stock solution, 1,000 µg/mL: Use a commercially available certified 1,000 µg/mL cadmium standard or, alternatively, dissolve 1.0000 g of cadmium metal in a minimum volume of 1:1 HCl and dilute to 1 L with 4% $HNO_3$. Observe expiration dates of commercial standards. Properly dispose of commercial standards with no expiration dates or prepared standards one year after their receipt or preparation date.

(viii) Matrix modifier for AAS-HGA analysis: Dissolve 1.0 g $NH_4H_2PO_4$ and 0.15 g $Mg(NO_3)_2 \cdot 6H_2O$ in approximately 200 mL deionized water. Add 1 mL $HNO_3$ and dilute to 500 mL with deionized water.

(ix) Nitric Acid, 1:1 $HNO_3$/DI $H_2O$ mixture: Carefully add a measured volume of concentrated $HNO_3$ to an equal volume of DI $H_2O$.

(x) Nitric acid, 10% v/v: Carefully add 100 mL of concentrated $HNO_3$ to 500 mL of DI $H_2O$ and dilute to 1 L.

(f) Glassware preparation.

(i) Clean Phillips beakers by refluxing with 1:1 nitric acid on a hot plate in a fume hood. Thoroughly rinse with deionized water and invert the beakers to allow them to drain dry.

(ii) Rinse volumetric flasks and all other glassware with 10% nitric acid and deionized water prior to use.

(g) Standard preparation for flame AAS analysis.

(i) Dilute stock solutions: Prepare 1, 5, 10 and 100 µg/mL cadmium standard stock solutions by making appropriate serial dilutions of 1,000 µg/mL cadmium standard stock solution with the diluting solution described in (e)(vi) of this subsection.

(ii) Working standards: Prepare cadmium working standards in the range of 0.02 to 2.0 µg/mL by making appropriate serial dilutions of the dilute stock solutions with the same diluting solution. A suggested method of preparation of the working standards is given below.

| Working standard (µg/mL) | Std solution (µg/mL) | Aliquot (mL) | Final vol. (mL) |
|---|---|---|---|
| 0.02 | 1 | 10 | 500 |
| 0.05 | 5 | 5 | 500 |
| 0.1 | 10 | 5 | 500 |
| 0.2 | 10 | 10 | 500 |
| 0.5 | 10 | 25 | 500 |
| 1 | 100 | 5 | 500 |
| 2 | 100 | 10 | 500 |

Store the working standards in 500-mL, narrow-mouth polyethylene or glass bottles with leak proof caps. Prepare every twelve months.

(h) Standard preparation for AAS-HGA analysis.

(i) Dilute stock solutions: Prepare 10, 100 and 1,000 ng/mL cadmium standard stock solutions by making appropriate ten-fold serial dilutions of the 1,000 µg/mL cadmium standard stock solution with the diluting solution described in (e)(vi) of this subsection.

(ii) Working standards: Prepare cadmium working standards in the range of 0.2 to 20 ng/mL by making appropriate serial dilutions of the dilute stock solutions with the same diluting solution. A suggested method of preparation of the working standards is given below.

| Working standard (ng/mL) | Std solution (ng/mL) | Aliquot (mL) | Final vol. (mL) |
|---|---|---|---|
| 0.2 | 10 | 2 | 100 |
| 0.5 | 10 | 5 | 100 |
| 1 | 10 | 10 | 100 |
| 2 | 100 | 2 | 100 |
| 5 | 100 | 5 | 100 |
| 10 | 100 | 10 | 100 |
| 20 | 1,000 | 2 | 100 |

Store the working standards in narrow-mouth polyethylene or glass bottles with leakproof caps. Prepare monthly.

(i) Sample preparation.

(i) Carefully transfer each sample filter with forceps from its filter cassette unit to a clean, separate 125-mL Phillips beaker along with any loose dust found in the cassette. Label each Phillips beaker with the appropriate sample number.

(ii) Digest the sample by adding 5 mL of concentrated nitric acid ($HNO_3$) to each Phillips beaker containing an air filter sample. Place the Phillips beakers on a hot plate in an exhaust hood and heat the samples until approximately 0.5 mL remains. The sample solution in each Phillips beaker should become clear. If it is not clear, digest the sample with another portion of concentrated nitric acid.

(iii) After completing the $HNO_3$ digestion and cooling the samples, add 40 µL (2 drops) of concentrated HCl to each air sample solution and then swirl the contents. Carefully add about 5 mL of deionized water by pouring it down the inside of each beaker.

(iv) Quantitatively transfer each cooled air sample solution from each Phillips beaker to a clean 10-mL volumetric flask. Dilute each flask to volume with deionized water and mix well.

(j) Flame AAS analysis.

Analyze all of the air samples for their cadmium content by flame atomic absorption spectroscopy (AAS) according to the instructions given below.

(i) Set up the atomic absorption spectrophotometer for the air/acetylene flame analysis of cadmium according to the SOP (subsection (5)(h) of this section) or the manufacturer's operational instructions. For the source lamp, use the cadmium hollow cathode or electrodeless discharge lamp operated at the manufacturer's recommended rating for continuous operation. Allow the lamp to warm up ten to twenty minutes or until the energy output stabilizes. Optimize conditions such as lamp position, burner head alignment, fuel and oxidant flow rates, etc. See the SOP or specific instrument manuals for details. Instrumental parameters for the Perkin-Elmer Model 603 used in the validation of this method are given in subsection (6) of this section.

(ii) Aspirate and measure the absorbance of a standard solution of cadmium. The standard concentration should be

within the linear range. For the instrumentation used in the validation of this method a 2 µg/mL cadmium standard gives a net absorbance reading of about 0.350 abs. units (see subsection (1)(e)(v) of this section) when the instrument and the source lamp are performing to manufacturer specifications.

(iii) To increase instrument response, scale expand the absorbance reading of the aspirated 2 µg/mL working standard approximately four times. Increase the integration time to at least three seconds to reduce signal noise.

(iv) Autozero the instrument while aspirating a deionized water blank. Monitor the variation in the baseline absorbance reading (baseline noise) for a few minutes to insure that the instrument, source lamp and associated equipment are in good operating condition.

(v) Aspirate the working standards and samples directly into the flame and record their absorbance readings. Aspirate the deionized water blank immediately after every standard or sample to correct for and monitor any baseline drift and noise. Record the baseline absorbance reading of each deionized water blank. Label each standard and sample reading and its accompanying baseline reading.

(vi) It is recommended that the entire series of working standards be analyzed at the beginning and end of the analysis of a set of samples to establish a concentration-response curve, ensure that the standard readings agree with each other and are reproducible. Also, analyze a working standard after every five or six samples to monitor the performance of the spectrophotometer. Standard readings should agree within ±10 to 15% of the readings obtained at the beginning of the analysis.

(vii) Bracket the sample readings with standards during the analysis. If the absorbance reading of a sample is above the absorbance reading of the highest working standard, dilute the sample with diluting solution and reanalyze. Use the appropriate dilution factor in the calculations.

(viii) Repeat the analysis of approximately ten percent of the samples for a check of precision.

(ix) If possible, analyze quality control samples from an independent source as a check on analytical recovery and precision.

(x) Record the final instrument settings at the end of the analysis. Date and label the output.

(k) AAS-HGA analysis.

Initially analyze all of the air samples for their cadmium content by flame atomic absorption spectroscopy (AAS) according to the instructions given in (j) of this subsection. If the concentration of cadmium in a sample solution is less than three times the quantitative detection limit (0.04 µg/mL (40 ng/mL) for the instrumentation used in the validation) and the sample results are to be averaged with other samples for TWA calculations, proceed with the AAS-HGA analysis of the sample as described below.

(i) Set up the atomic absorption spectrophotometer and HGA for flameless atomic absorption analysis of cadmium according to the SOP (subsection (5)(i) of this section) or the manufacturer's operational instructions and allow the instrument to stabilize. The graphite furnace atomizer is equipped with a pyrolytically coated graphite tube containing a pyrolytic platform. For the source lamp, use a cadmium hollow cathode or electrodeless discharge lamp operated at the manufacturer's recommended setting for graphite furnace operation. The Zeeman background corrector and EDL are recommended for use with the L'vov platform. Instrumental parameters for the Perkin-Elmer Model 5100 spectrophotometer and Zeeman HGA-600 graphite furnace used in the validation of this method are given in subsection (7) of this section.

(ii) Optimize the energy reading of the spectrophotometer at 228.8 nm by adjusting the lamp position and the wavelength according to the manufacturer's instructions.

(iii) Set up the autosampler to inject a 5-µL aliquot of the working standard, sample or reagent blank solution onto the L'vov platform along with a 10-µL overlay of the matrix modifier.

(iv) Analyze the reagent blank (diluting solution, (e)(vi) of this subsection) and then autozero the instrument before starting the analysis of a set of samples. It is recommended that the reagent blank be analyzed several times during the analysis to assure the integrated absorbance (peak area) reading remains at or near zero.

(v) Analyze a working standard approximately midway in the linear portion of the working standard range two or three times to check for reproducibility and sensitivity (see subsection (1)(e)(v) and (vi) of this section) before starting the analysis of samples. Calculate the experimental characteristic mass value from the average integrated absorbance reading and injection volume of the analyzed working standard. Compare this value to the manufacturer's suggested value as a check of proper instrument operation.

(vi) Analyze the reagent blank, working standard, and sample solutions. Record and label the peak area (abs-sec) readings and the peak and background peak profiles on the printer/plotter.

(vii) It is recommended the entire series of working standards be analyzed at the beginning and end of the analysis of a set of samples. Establish a concentration-response curve and ensure standard readings agree with each other and are reproducible. Also, analyze a working standard after every five or six samples to monitor the performance of the system. Standard readings should agree within ±15% of the readings obtained at the beginning of the analysis.

(viii) Bracket the sample readings with standards during the analysis. If the peak area reading of a sample is above the peak area reading of the highest working standard, dilute the sample with the diluting solution and reanalyze. Use the appropriate dilution factor in the calculations.

(ix) Repeat the analysis of approximately ten percent of the samples for a check of precision.

(x) If possible, analyze quality control samples from an independent source as a check of analytical recovery and precision.

(xi) Record the final instrument settings at the end of the analysis. Date and label the output.

(l) Calculations.

Note: Standards used for HGA analysis are in ng/mL. Total amounts of cadmium from calculations will be in ng (not µg) unless a prior conversion is made.

(i) Correct for baseline drift and noise in flame AAS analysis by subtracting each baseline absorbance reading from its corresponding working standard or sample absorbance reading to obtain the net absorbance reading for each standard and sample.

(ii) Use a least squares regression program to plot a concentration-response curve of net absorbance reading (or peak area for HGA analysis) versus concentration (µg/mL or ng/mL) of cadmium in each working standard.

(iii) Determine the concentration (µg/mL or ng/mL) of cadmium in each sample from the resulting concentration-response curve. If the concentration of cadmium in a sample solution is less than three times the quantitative detection limit (0.04 µg/mL (40 ng/mL) for the instrumentation used in the validation of the method) and if consecutive samples were taken on one employee and the sample results are to be averaged with other samples to determine a single TWA, reanalyze the sample by AAS-HGA as described in (k) of this subsection and report the AAS-HGA analytical results.

(iv) Calculate the total amount (µg or ng) of cadmium in each sample from the sample solution volume (mL):

W=(C)(sample vol, mL)(DF)
Where: W=Total cadmium in sample
C=Calculated concentration of cadmium
DF=Dilution Factor (if applicable)

(v) Make a blank correction for each air sample by subtracting the total amount of cadmium in the corresponding blank sample from the total amount of cadmium in the sample.

(vi) Calculate the concentration of cadmium in an air sample ($mg/m^3$ or $\mu g/m^3$) by using one of the following equations:

$mg/m^3=W_{bc}/$(Air vol sampled, L)
or
$\mu g/m^3=(W_{bc})(1{,}000$ ng/µg)/(Air vol sampled, L)
Where: $W_{bc}$=blank corrected total µg cadmium in the sample. (1µg=1,000 ng)

(4) Backup data.

(a) Introduction.

(i) The purpose of this evaluation is to determine the analytical method recovery, working standard range, and qualitative and quantitative detection limits of the two atomic absorption analytical techniques included in this method. The evaluation consisted of the following experiments:

(A) An analysis of twenty-four samples (six samples each at 0.1, 0.5, 1 and 2 times the TWA-PEL) for the analytical method recovery study of the flame AAS analytical technique.

(B) An analysis of eighteen samples (six samples each at 0.5, 1 and 2 times the action level TWA-PEL) for the analytical method recovery study of the AAS-HGA analytical technique.

(C) Multiple analyses of the reagent blank and a series of standard solutions to determine the working standard range and the qualitative and quantitative detection limits for both atomic absorption analytical techniques.

(ii) The analytical method recovery results at all test levels were calculated from concentration-response curves and statistically examined for outliers at the ninety-nine percent confidence level. Possible outliers were determined using the Treatment of Outliers test (subsection (5)(j) of this section). In addition, the sample results of the two analytical techniques, at 0.5, 1.0 and 2.0 times their target concentrations, were tested for homogeneity of variances also at the ninety-nine percent confidence level. Homogeneity of the coefficients of variation was determined using the Bartlett's test (subsection (5)(k) of this section). The overall analytical error (OAE) at the ninety-five percent confidence level was calculated using the equation (subsection (5)(l) of this section):

$$OAE=\pm[\,|\,\text{Bias}\,|+(1.96)(CV_1(\text{pooled}))(100\%)]$$

(iii) A derivation of the International Union of Pure and Applied Chemistry (IUPAC) detection limit equation (subsection (5)(m) of this section) was used to determine the qualitative and quantitative detection limits for both atomic absorption analytical techniques:

$C_{ld}=k(sd)/m$ (Equation 1)
Where: $C_{ld}$=the smallest reliable detectable concentration an analytical instrument can determine at a given confidence level.
k=3 for the Qualitative Detection Limit at the 99.86% Confidence Level
=10 for the Quantitative Detection Limit at the 99.99% Confidence Level.
sd=standard deviation of the reagent blank (Rbl) readings.
m=analytical sensitivity or slope as calculated by linear regression.

(iv) Collection efficiencies of metallic fume and dust atmospheres on 0.8-µm mixed cellulose ester membrane filters are well documented and have been shown to be excellent (subsection (5)(k) of this section). Since elemental cadmium and the cadmium component of cadmium compounds are nonvolatile, stability studies of cadmium spiked MCEF samples were not performed.

(b) Equipment.

(i) A Perkin-Elmer (PE) Model 603 spectrophotometer equipped with a manual gas control system, a stainless steel nebulizer, a burner mixing chamber, a flow spoiler and a 10 cm (one-slot) burner head was used in the experimental validation of the flame AAS analytical technique. A PE cadmium hollow cathode lamp, operated at the manufacturer's recommended current setting for continuous operation (4 mA), was used as the source lamp. Instrument parameters are listed in subsection (6) of this section.

(ii) A PE Model 5100 spectrophotometer, Zeeman HGA-600 graphite furnace atomizer and AS-60 HGA autosampler were used in the experimental validation of the AAS-HGA analytical technique. The spectrophotometer was equipped with a PE Series 7700 professional computer and Model PR-310 printer. A PE System 2 cadmium electrodeless discharge lamp, operated at the manufacturer's recommended current setting for modulated operation (170 mA), was used as the source lamp. Instrument parameters are listed in subsection (7) of this section.

(c) Reagents.

(i) J.T. Baker Chem. Co. (Analyzed grade) concentrated nitric acid, 69.0-71.0%, and concentrated hydrochloric acid, 36.5-38.0%, were used to prepare the samples and standards.

(ii) Ammonium phosphate, monobasic, $NH_4H_2PO_4$ and magnesium nitrate hexahydrate, $Mg(NO_3)_2.6\ H_2O$ both manufactured by the Mallinckrodt Chem. Co., were used to prepare the matrix modifier for AAS-HGA analysis.

(d) Standard preparation for flame AAS analysis.

(i) Dilute stock solutions: Prepared 0.01, 0.1, 1, 10 and 100 µg/mL cadmium standard stock solutions by making appropriate serial dilutions of a commercially available 1,000 µg/mL cadmium standard stock solution (RICCA Chemical

Co., Lot# A102) with the diluting solution (4% $HNO_3$, 0.4% HCl).

(ii) Analyzed standards: Prepared cadmium standards in the range of 0.001 to 2.0 µg/mL by pipetting 2 to 10 mL of the appropriate dilute cadmium stock solution into a 100-mL volumetric flask and diluting to volume with the diluting solution. (See subsection (3)(g)(ii) of this section).

(e) Standard preparation for AAS-HGA analysis.

(i) Dilute stock solutions: Prepared 1, 10, 100 and 1,000 ng/mL cadmium standard stock solutions by making appropriate serial dilutions of a commercially available 1,000 µg/mL cadmium standard stock solution (J.T. Baker Chemical Co., Instra-analyzed, Lot# D22642) with the diluting solution (4% $HNO_3$, 0.4% HCl).

(ii) Analyzed standards: Prepared cadmium standards in the range of 0.1 to 40 ng/mL by pipetting 2 to 10 mL of the appropriate dilute cadmium stock solution into a 100-mL volumetric flask and diluting to volume with the diluting solution. (See subsection (3)(h)(ii) of this section).

(f) Detection limits and standard working range for flame AAS analysis.

(i) Analyzed the reagent blank solution and the entire series of cadmium standards in the range of 0.001 to 2.0 µg/mL three to six times according to the instructions given in subsection (3)(j) of this section. The diluting solution (4% $HNO_3$, 0.4% HCl) was used as the reagent blank. The integration time on the PE 603 spectrophotometer was set to 3.0 seconds and a four-fold expansion of the absorbance reading of the 2.0 µg/mL cadmium standard was made prior to analysis. The 2.0 µg/mL standard gave a net absorbance reading of 0.350 abs. units prior to expansion in agreement with the manufacturer's specifications (subsection (5)(f) of this section).

(ii) The net absorbance readings of the reagent blank and the low concentration Cd standards from 0.001 to 0.1 µg/mL and the statistical analysis of the results are shown in Table 1. The standard deviation, sd, of the six net absorbance readings of the reagent blank is 1.05 abs. units. The slope, m, as calculated by a linear regression plot of the net absorbance readings (shown in Table 2) of the 0.02 to 1.0 µg/mL cadmium standards versus their concentration is 772.7 abs. units/(µg/mL).

(iii) If these values for sd and the slope, m, are used in Eqn. 1 ((a)(ii) of this subsection), the qualitative and quantitative detection limits as determined by the IUPAC Method are:

$C_{ld}$= (3)(1.05 abs. units)/(772.7 abs. units/(µg/mL)) = 0.0041 µg/mL for the qualitative detection limit.

$C_{ld}$= (10)(1.05 abs. units)/(772.7 abs. units/µg/mL)) =0.014 µg/mL for the quantitative detection limit.

The qualitative and quantitative detection limits for the flame AAS analytical technique are 0.041 µg and 0.14 µg cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.2 µg/$m^3$ and 0.70 µg/$m^3$ for a 200 L air volume.

(iv) The recommended Cd standard working range for flame AAS analysis is 0.02 to 2.0 µg/mL. The net absorbance readings of the reagent blank and the recommended working range standards and the statistical analysis of the results are shown in Table 2. The standard of lowest concentration in the working range, 0.02 µg/mL, is slightly greater than the calculated quantitative detection limit, 0.014 µg/mL. The standard of highest concentration in the working range, 2.0 µg/mL, is at the upper end of the linear working range suggested by the manufacturer (subsection (5)(f) of this section). Although the standard net absorbance readings are not strictly linear at concentrations above 0.5 µg/mL, the deviation from linearity is only about ten percent at the upper end of the recommended standard working range. The deviation from linearity is probably caused by the four-fold expansion of the signal suggested in the method. As shown in Table 2, the precision of the standard net absorbance readings are excellent throughout the recommended working range; the relative standard deviations of the readings range from 0.009 to 0.064.

(g) Detection limits and standard working range for AAS-HGA analysis.

(i) Analyzed the reagent blank solution and the entire series of cadmium standards in the range of 0.1 to 40 ng/mL according to the instructions given in subsection (3)(k) of this section. The diluting solution (4% $HNO_3$, 0.4% HCl) was used as the reagent blank. A fresh aliquot of the reagent blank and of each standard was used for every analysis. The experimental characteristic mass value was 0.41 pg, calculated from the average peak area (abs-sec) reading of the 5 ng/mL standard which is approximately midway in the linear portion of the working standard range. This agreed within twenty percent with the characteristic mass value, 0.35 pg, listed by the manufacturer of the instrument (subsection (5)(b) of this section).

(ii) The peak area (abs-sec) readings of the reagent blank and the low concentration Cd standards from 0.1 to 2.0 ng/mL and statistical analysis of the results are shown in Table 3. Five of the reagent blank peak area readings were zero and the sixth reading was 1 and was an outlier. The near lack of a blank signal does not satisfy a strict interpretation of the IUPAC method for determining the detection limits. Therefore, the standard deviation of the six peak area readings of the 0.2 ng/mL cadmium standard, 0.75 abs-sec, was used to calculate the detection limits by the IUPAC method. The slope, m, as calculated by a linear regression plot of the peak area (abs-sec) readings (shown in Table 4) of the 0.2 to 10 ng/mL cadmium standards versus their concentration is 51.5 abs-sec/(ng/mL).

(iii) If 0.75 abs-sec (sd) and 51.5 abs-sec/(ng/mL) (m) are used in Eqn. 1 ((a)(iii) of this subsection), the qualitative and quantitative detection limits as determined by the IUPAC method are:

$C_{ld}$= (3)(0.75 abs-sec)/(51.5 abs-sec/(ng/mL) = 0.044 ng/mL for the qualitative detection limit.

$C_{ld}$= (10)(0.75 abs-sec)/(51.5 abs-sec/(ng/mL) = 0.15 ng/mL for the quantitative detection limit. The qualitative and quantitative detection limits for the AAS-HGA analytical technique are 0.44 ng and 1.5 ng cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.007 µg/$m^3$ and 0.025 µg/$m^3$ for a 60 L air volume.

(iv) The peak area (abs-sec) readings of the Cd standards from 0.2 to 40 ng/mL and the statistical analysis of the results are given in Table 4. The recommended standard working range for AAS-HGA analysis is 0.2 to 20 ng/mL. The standard of lowest concentration in the recommended working range is slightly greater than the calculated quantitative detection limit, 0.15 ng/mL. The deviation from

linearity of the peak area readings of the 20 ng/mL standard, the highest concentration standard in the recommended working range, is approximately ten percent. The deviations from linearity of the peak area readings of the thirty and forty ng/mL standards are significantly greater than ten percent. As shown in Table 4, the precision of the peak area readings are satisfactory throughout the recommended working range; the relative standard deviations of the readings range from 0.025 to 0.083.

(h) Analytical method recovery for flame AAS analysis.

(i) Four sets of spiked MCEF samples were prepared by injecting 20 µL of 10, 50, 100 and 200 µg/mL dilute cadmium stock solutions on 37 mm diameter filters (part No. AAWP 037 00, Millipore Corp., Bedford, MA) with a calibrated micropipet. The dilute stock solutions were prepared by making appropriate serial dilutions of a commercially available 1,000 µg/mL cadmium standard stock solution (RICCA Chemical Co., Lot # A102) with the diluting solution (4% $HNO_3$, 0.4% HCl). Each set contained six samples and a sample blank. The amount of cadmium in the prepared sets were equivalent to 0.1, 0.5, 1.0 and 2.0 times the TWA PEL target concentration of 5 µg/m$^3$ for a 400 L air volume.

(ii) The air-dried spiked filters were digested and analyzed for their cadmium content by flame atomic absorption spectroscopy (AAS) following the procedure described in subsection (3) of this section. The 0.02 to 2.0 µg/mL cadmium standards (the suggested working range) were used in the analysis of the spiked filters.

(iii) The results of the analysis are given in Table 5. One result at 0.5 times the TWA PEL target concentration was an outlier and was excluded from statistical analysis. Experimental justification for rejecting it is that the outlier value was probably due to a spiking error. The coefficients of variation for the three test levels at 0.5 to 2.0 times the TWA PEL target concentration passed the Bartlett's test and were pooled.

(iv) The average recovery of the six spiked filter samples at 0.1 times the TWA PEL target concentration was 118.2% with a coefficient of variation (CV1) of 0.128. The average recovery of the spiked filter samples in the range of 0.5 to 2.0 times the TWA target concentration was 104.0% with a pooled coefficient of variation (CV1) of 0.010. Consequently, the analytical bias found in these spiked sample results over the tested concentration range was +4.0% and the OAE was ±6.0%.

(i) Analytical method recovery for AAS-HGA analysis.

(i) Three sets of spiked MCEF samples were prepared by injecting 15 µL of 5, 10 and 20 µg/mL dilute cadmium stock solutions on 37 mm diameter filters (part no. AAWP 037 00, Millipore Corp., Bedford, MA) with a calibrated micropipet. The dilute stock solutions were prepared by making appropriate serial dilutions of a commercially available certified 1,000 µg/mL cadmium standard stock solution (Fisher Chemical Co., Lot# 913438-24) with the diluting solution (4% $HNO_3$, 0.4% HCl). Each set contained six samples and a sample blank. The amount of cadmium in the prepared sets were equivalent to 0.5, 1 and 2 times the action level TWA target concentration of 2.5 µg/m$^3$ for a 60 L air volume.

(ii) The air-dried spiked filters were digested and analyzed for their cadmium content by flameless atomic absorption spectroscopy using a heated graphite furnace atomizer following the procedure described in subsection (3) of this section. A five-fold dilution of the spiked filter samples at 2 times the action level TWA was made prior to their analysis. The 0.05 to 20 ng/mL cadmium standards were used in the analysis of the spiked filters.

(iii) The results of the analysis are given in Table 6. There were no outliers. The coefficients of variation for the three test levels at 0.5 to 2.0 times the action level TWA PEL passed the Bartlett's test and were pooled. The average recovery of the spiked filter samples was 94.2% with a pooled coefficient of variation (CV1) of 0.043. Consequently, the analytical bias was -5.8% and the OAE was ±14.2%.

(j) Conclusions.

The experiments performed in this evaluation show the two atomic absorption analytical techniques included in this method to be precise and accurate and have sufficient sensitivity to measure airborne cadmium over a broad range of exposure levels and sampling periods.

(5) References.

(a) *Slavin, W. Graphite Furnace AAS—A Source Book; Perkin-Elmer Corp., Spectroscopy Div.: Ridgefield, CT, 1984; p. 18 and pp. 83-90.*

(b) *Grosser, Z., Ed.; Techniques in Graphite Furnace Atomic Absorption Spectrophotometry; Perkin-Elmer Corp., Spectroscopy Div.: Ridgefield, CT, 1985.*

(c) *Occupational Safety and Health Administration Salt Lake Technical Center: Metal and Metalloid Particulate in Workplace Atmospheres (Atomic Absorption) (USDOL/OSHA Method No. ID-121). In OSHA Analytical Methods Manual 2nd ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1991.*

(d) *Occupational Safety and Health Administration Salt Lake Technical Center: Metal and Metalloid Particulate in Workplace Atmospheres (ICP) (USDOL/OSHA Method No. ID-125G). In OSHA Analytical Methods Manual 2nd ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1991.*

(e) *Windholz, M., Ed.; The Merck Index, 10th ed.; Merck & Co.: Rahway, NJ, 1983.*

(f) *Analytical Methods for Atomic Absorption Spectrophotometry, The Perkin-Elmer Corporation: Norwalk, CT, 1982.*

(g) *Slavin, W., D.C. Manning, G. Carnrick, and E. Pruszkowska: Properties of the Cadmium Determination with the Platform Furnace and Zeeman Background Correction. Spectrochim. Acta 38B:1157-1170 (1983).*

(h) *Occupational Safety and Health Administration Salt Lake Technical Center: Standard Operating Procedure for Atomic Absorption. Salt Lake City, UT: USDOL/OSHA-SLTC, In progress.*

(i) *Occupational Safety and Health Administration Salt Lake Technical Center: AAS-HGA Standard Operating Procedure. Salt Lake City, UT: USDOL/OSHA- SLTC, In progress.*

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*Vol.1, edited by I. M. Kolthoff and P. J. Elving. New York: John Wiley and Sons, 1978. pp. 282-285.*

(k) *National Institute for Occupational Safety and Health: Documentation of the NIOSH Validation Tests by D. Taylor, R. Kupel, and J. Bryant (DHEW/NIOSH Pub. No. 77-185). Cincinnati, OH: National Institute for Occupational Safety and Health, 1977.*

(l) *Occupational Safety and Health Administration Analytical Laboratory: Precision and Accuracy Data Protocol for Laboratory Validations. In OSHA Analytical Methods Manual 1st ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists (Pub. No. ISBN: 0-936712-66-X), 1985.*

(m) *Long, G.L. and J.D. Winefordner: Limit of Detection—A Closer Look at the IUPAC Definition. Anal.Chem. 55:712A-724A (1983).*

(n) *American Conference of Governmental Industrial Hygienists: Documentation of Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986.*

Table 1—Cd Detection Limit Study
[Flame AAS Analysis]

| STD (µg/mL) | Absorbance reading at 228.8 nm | | Statistical analysis |
|---|---|---|---|
| Reagent blank | 5 | 2 | n=6. |
| | 4 | 3 | mean=3.50. |
| | 4 | 3 | std dev=1.05. |
| | | | CV=0.30. |
| 0.001 | 6 | 6 | n=6. |
| | 2 | 4 | mean=5.00. |
| | 6 | 6 | std dev=1.67. |
| | | | CV=0.335. |
| 0.002 | 5 | 7 | n=6. |
| | 7 | 3 | mean=5.50. |
| | 7 | 4 | std dev=1.76. |
| | | | CV=0.320. |
| 0.005 | 7 | 7 | n=6. |
| | 8 | 8 | mean=7.33. |
| | 8 | 6 | std dev=0.817. |
| | | | CV=0.111. |
| 0.010 | 10 | 9 | n=6. |
| | 10 | 13 | mean=10.3. |
| | 10 | 10 | std dev=1.37. |
| | | | CV=0.133. |
| 0.020 | 20 | 23 | n=6. |
| | 20 | 22 | mean=20.8. |
| | 20 | 20 | std dev=1.33. |
| | | | CV=0.064. |
| 0.050 | 42 | 42 | n=6. |
| | 42 | 42 | mean=42.5. |
| | 42 | 45 | std dev=1.22. |
| | | | CV=0.029. |
| 0.10 | | 84 | n=3. |
| | | 80 | mean=82.3. |
| | | 83 | std dev=2.08. |
| | | | CV=0.025. |

Table 2—Cd Standard Working Range Study
[Flame AAS Analysis]

| STD (µg/mL) | Absorbance reading at 228.8 nm | | Statistical analysis |
|---|---|---|---|
| Reagent blank | 5 | 2 | n=6. |
| | 4 | 3 | mean=3.50. |
| | 4 | 3 | std dev=1.05. |
| | | | CV=0.30. |
| 0.020 | 20 | 23 | n=6. |
| | 20 | 22 | mean=20.8. |
| | 20 | 20 | std dev=1.33. |
| 0.050 | 42 | 42 | n=6. |
| | 42 | 42 | mean=42.5. |
| | 42 | 45 | std dev=1.22. |
| | | | CV=0.029. |
| 0.10 | | 84 | n=3. |
| | | 80 | mean=82.3. |
| | | 83 | std dev=2.08. |
| | | | CV=0.025. |
| 0.20 | | 161 | n=3. |
| | | 161 | mean=160.0. |
| | | 158 | std dev=1.73. |
| | | | CV=0.011. |
| 0.50 | | 391 | n=3. |
| | | 389 | mean=391.0. |
| | | 393 | std dev=2.00. |
| | | | CV=0.005. |
| 1.00 | | 760 | n=3. |
| | | 748 | mean=753.3. |
| | | 752 | std dev=6.11. |
| | | | CV=0.008. |
| 2.00 | | 1416 | n=3. |
| | | 1426 | mean=1414.3. |
| | | 1401 | std dev=12.6. |
| | | | CV=0.009. |

Table 3—Cd Detection Limit Study
[AAS-HGA Analysis]

| STD (ng/mL) | Peak area readings x $10^3$ at 228.8 nm | | Statistical analysis |
|---|---|---|---|
| Reagent blank | 0 | 0 | n=6. |
| | 0 | 1 | mean=0.167. |
| | 0 | 0 | std dev=0.41. |
| | | | CV=2.45. |
| 0.1 | 8 | 6 | n=6. |
| | 5 | 7 | mean=7.7. |
| | 13 | 7 | std dev=2.8. |
| | | | CV=0.366. |
| 0.2 | 11 | 13 | n=6. |
| | 11 | 12 | mean=11.8. |
| | 12 | 12 | std dev=0.75. |
| | | | CV=0.064. |

| | | |
|---|---|---|
| 0.5 | 28 33 | n=6. |
| | 26 28 | mean=28.8. |
| | 28 30 | std dev=2.4. |
| | | CV=0.083. |
| 1.0 | 52 55 | n=6. |
| | 56 58 | mean=54.8. |
| | 54 54 | std dev=2.0. |
| | | CV=0.037. |
| 2.0 | 101 112 | n=6. |
| | 110 110 | mean=108.8. |
| | 110 110 | std dev=3.9. |
| | | CV=0.036. |

Table 4—Cd Standard Working Range Study

[AAS-HGA Analysis]

| STD (ng/mL) | Peak area readings x $10^3$ at 228.8 nm | Statistical analysis |
|---|---|---|
| 0.2 | 11 13 | n=6. |
| | 11 12 | mean=11.8. |
| | 12 12 | std dev=0.75. |
| | | CV=0.064. |
| 0.5 | 28 33 | n=6. |
| | 26 28 | mean=28.8. |
| | 28 30 | std dev=2.4. |
| | | CV=0.083. |
| 1.0 | 52 55 | n=6. |
| | 56 58 | mean=54.8. |
| | 54 54 | std dev=2.0. |
| | | CV=0.037. |
| 2.0 | 101 112 | n=6. |
| | 110 110 | mean=108.8. |
| | 110 110 | std dev=3.9. |
| | | CV=0.036. |
| 5.0 | 247 265 | n=6. |
| | 268 275 | mean=265.5. |
| | 259 279 | std dev=11.5. |
| | | CV=0.044. |
| 10.0 | 495 520 | n=6. |
| | 523 513 | mean=516.7. |
| | 516 533 | std dev=12.7. |
| | | CV=0.025. |
| 20.0 | 950 953 | n=6. |
| | 951 958 | mean=941.8. |
| | 949 890 | std dev=25.6. |
| | | CV=0.027. |
| 30.0 | 1269 1291 | n=6. |
| | 1303 1307 | mean=1293. |
| | 1295 1290 | std dev=13.3. |
| | | CV=0.010. |
| 40.0 | 1505 1567 | n=6. |
| | 1535 1567 | mean=1552. |
| | 1566 1572 | std dev=26.6. |
| | | CV=0.017. |

Table 5—Analytical Method Recovery

[Flame AAS Analysis]

| Test level | 0.5x | | 1.0x | | | 2.0x | | |
|---|---|---|---|---|---|---|---|---|
| µg taken | µg found | Percent rec. | µg taken | µg found | Percent rec. | µg taken | µg found | Percent rec. |
| 1.00 | 1.0715 | 107.2 | 2.00 | 2.0688 | 103.4 | 4.00 | 4.1504 | 103.8 |
| 1.00 | 1.0842 | 108.4 | 2.00 | 2.0174 | 100.9 | 4.00 | 4.1108 | 102.8 |
| 1.00 | 1.0842 | 108.4 | 2.00 | 2.0431 | 102.2 | 4.00 | 4.0581 | 101.5 |
| 1.00 | *1.0081 | *100.8 | 2.00 | 2.0431 | 102.2 | 4.00 | 4.0844 | 102.1 |
| 1.00 | 1.0715 | 107.2 | 2.00 | 2.0174 | 100.9 | 4.00 | 4.1504 | 103.8 |
| 1.00 | 1.0842 | 108.4 | 2.00 | 2.0045 | 100.2 | 4.00 | 4.1899 | 104.7 |
| | n= | | | 5 | | | 6 | |
| | mean= | | | 107.9 | | | 101.6 | 103.1 |
| | std dev= | | | 0.657 | | | 1.174 | 1.199 |
| | $CV_1$= | | | 0.006 | | | 0.011 | 0.012 |
| | $CV_1$ (pooled)= | | | 0.010 | | | | |

* Rejected as an outlier—this value did not pass the outlier T-test at the 99% confidence level.

Test level 0.1x

| µg taken | µg found | Percent rec. |
|---|---|---|
| 0.200 | 0.2509 | 125.5 |
| 0.200 | 0.2509 | 125.5 |
| 0.200 | 0.2761 | 138.1 |
| 0.200 | 0.2258 | 112.9 |
| 0.200 | 0.2258 | 112.9 |
| 0.200 | 0.1881 | 94.1 |

n= 6
mean= 118.2
std dev= 15.1
$CV_1$= 0.128

Table 6—Analytical Method Recovery

[AAS-HGA analysis]

| Test level | 0.5x | | | 1.0x | | | 2.0x | | |
|---|---|---|---|---|---|---|---|---|---|
| ng taken | ng found | Percent rec. | ng taken | ng found | Percent rec. | ng taken | ng found | Percent rec. |
| 75 | 71.23 | 95.0 | 150 | 138.00 | 92.0 | 300 | 258.43 | 86.1 |
| 75 | 71.47 | 95.3 | 150 | 138.29 | 92.2 | 300 | 258.46 | 86.2 |
| 75 | 70.02 | 93.4 | 150 | 136.30 | 90.9 | 300 | 280.55 | 93.5 |
| 75 | 77.34 | 103.1 | 150 | 146.62 | 97.7 | 300 | 288.34 | 96.1 |
| 75 | 78.32 | 104.4 | 150 | 145.17 | 96.8 | 300 | 261.74 | 87.2 |
| 75 | 71.96 | 95.9 | 150 | 144.88 | 96.6 | 300 | 277.22 | 92.4 |
| | n= | 6 | | 6 | 6 | | | |
| | mean= | 97.9 | | 94.4 | 90.3 | | | |
| | std dev= | 4.66 | | 2.98 | 4.30 | | | |
| | $CV_1$= | 0.048 | | 0.032 | 0.048 | | | |
| | $CV_1$ (pooled)= | 0.043 | | | | | | |

(6) Instrumental Parameters for Flame AAS Analysis
Atomic Absorption Spectrophotometer
(Perkin-Elmer Model 603)
Flame: Air/Acetylene—lean, blue
Oxidant Flow: 55
Fuel Flow: 32
Wavelength: 228.8 nm
Slit: 4 (0.7 nm)
Range: UV
Signal: Concentration (4 exp)
Integration Time: 3 sec

(7) Instrumental Parameters for HGA Analysis
Atomic Absorption Spectrophotometer
(Perkin-Elmer Model 5100)
Signal Type: Zeeman AA
Slitwidth: 0.7 nm
Wavelength: 228.8 nm
Measurement: Peak Area
Integration Time: 6.0 sec
BOC Time: 5 sec BOC=Background Offset Correction. Zeeman Graphite Furnace
(Perkin-Elmer Model HGA-600)

| Step | Ramp time (sec) | Hold time (sec) | Temp. (°C) | Argon flow (mL/min) | Read (sec) |
|---|---|---|---|---|---|
| 1) Predry | 5 | 10 | 90 | 300 | |
| 2) Dry | 30 | 10 | 140 | 300 | |
| 3) Char | 10 | 20 | 900 | 300 | |
| 4) Cool Down | 1 | 8 | 30 | 300 | |
| 5) Atomize | 0 | 5 | 1600 | 0 | -1 |
| 6) Burnout | 1 | 8 | 2500 | 300 | |

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07449, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07449, filed 3/13/93, effective 4/27/93.]

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

**WAC 296-62-07451 A short description of Appendix F to 29 CFR 1910.1027—Nonmandatory protocol for biological monitoring.** Appendix F is not included in this standard due to limited employer/employee application. The following is a brief synopsis of the content of Appendix F to 29 CFR 1910.1027, Cadmium.

(1) The medical monitoring program for cadmium requires that blood and urine samples must be collected at defined intervals from workers by physicians responsible for medical monitoring. These samples are sent to commercial laboratories that perform the required analyses and report results of these analyses to the responsible physicians. To ensure the accuracy and reliability of these laboratory analyses, the laboratories to which samples are submitted should participate in an ongoing and efficacious proficiency testing program.

(2) This nonmandatory protocol is intended to provide guidelines and recommendations for physicians and laboratories to improve the accuracy and reliability of the procedures used to analyze the biological samples collected as part of the medical monitoring program for cadmium. This protocol provides procedures for characterizing and maintaining the quality of analytic results derived from the analyses of cadmium in blood (CDB), cadmium in urine (CDU), and beta-2-microglobulin in urine (B2MU) by commercial laboratories. Laboratories conforming to the provisions of this nonmandatory protocol shall be known as "participating laboratories."

(3) This protocol describes procedures that may be used by the responsible physicians to identify laboratories most likely to be proficient in the analysis of samples used in the biological monitoring of cadmium. It also provides procedures for record keeping and reporting by laboratories participating in proficiency testing programs, and recommendations to assist these physicians in interpreting analytical results determined by participating laboratories.

(4) For those needing Appendix F, 29 CFR 1910.1027, in its entirety, a copy may be obtained by request to:

Department of Labor and Industries
Division of Industrial Safety and Health
Standards and Information
Post Office Box 44620
Olympia, Washington 98504-4620
or telephone (206) 956-5527

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07451, filed 3/13/93, effective 4/27/93.]

**WAC 296-62-076 Methylenedianiline.**

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-076, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07601 Scope and application.** (1) WAC 296-62-076 applies to all occupational exposures to MDA, Chemical Abstracts Service Registry No. 101-77-9, except as provided in subsections (2) through (7) of this section.

(2) Except as provided in subsection (8) of this section and WAC 296-62-07609(5), this section does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(3) Except as provided in subsection (8) of this section, WAC 296-62-076 does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(4) WAC 296-62-076 does not apply to the storage, transportation, distribution, or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids, except for the provisions of WAC 296-62-054 and 296-62-07607.

(5) WAC 296-62-076 does not apply to the construction industry as defined in WAC 296-155-012(6). (Exposure to MDA in the construction industry is covered by WAC 296-155-173.)

(6) Except as provided in subsection (8) of this section, WAC 296-62-076 does not apply to materials in any form which contain less than 0.1% MDA by weight or volume.

(7) Except as provided in subsection (8) of this section, WAC 296-62-076 does not apply to "finished articles containing MDA."

(8) Where products containing MDA are exempted under subsections (2) through (7) of this section, the employer shall maintain records of the initial monitoring results or objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in the recordkeeping provision of WAC 296-62-07631.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07601, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07603 Definitions.** For the purpose of WAC 296-62-076, the following definitions shall apply:

(1) "Action level" means a concentration of airborne MDA of 5 ppb as an 8-hour time-weighted average.

(2) "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 WAC 296-62-07633 of WAC 296-62-076, or any other person authorized by WISHA or regulations issued by WISHA.

(3) "Container" means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, commercial packaging, or the like, but does not include piping systems.

(4) "Dermal exposure to MDA" occurs where employees are engaged in the handling, application, or use of mixtures or materials containing MDA, with any of the following nonairborne forms of MDA:

(a) Liquid, powdered, granular, or flaked mixtures containing MDA in concentrations greater than 0.1% by weight or volume; and

(b) Materials other than "finished articles" containing MDA in concentrations greater than 0.1% by weight or volume.

(5) "Director" means the director of the department of labor and industries, or his/her designated representative.

(6) "Emergency" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which results in an unexpected and potentially hazardous release of MDA.

(7) "Employee exposure" means exposure to MDA which would occur if the employee were not using respirators or protective work clothing and equipment.

(8) "Finished article containing MDA" is defined as a manufactured item:

(a) Which is formed to a specific shape or design during manufacture;

(b) Which has end use function(s) dependent in whole or part upon its shape or design during end use; and

(c) Where applicable, is an item which is fully cured by virtue of having been subjected to the conditions (temperature, time) necessary to complete the desired chemical reaction.

(9) "4,4' methylenedianiline" or "MDA" means the chemical 4,4'- diaminodiphenylmethane, Chemical Abstract Service Registry number 101-77-9, in the form of a vapor, liquid, or solid. The definition also includes the salts of MDA.

(10) "Regulated areas" means areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits, or where dermal exposure to MDA can occur.

(11) "STEL" means short-term exposure limit as determined by any 15 minute sample period.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07603, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07605 Permissible exposure limits (PEL).** The employer shall assure that no employee is exposed to an airborne concentration of MDA in excess of ten parts per billion (10 ppb) as an 8-hour time-weighted average or a STEL of 100 ppb.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07605, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07607 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 the appropriate personal protective equipment and clothing as required in WAC 296-62-07615 and 296-62-07617 until the emergency is abated.

(c) The plan shall specifically include provisions for alerting and evacuating affected employees as well as the elements prescribed in chapter 296-24 WAC, Part G-1, "Employee emergency plans and fire prevention plans."

(2) Alerting employees. Where there is the possibility of employee exposure to MDA due to an emergency, means shall be developed to alert promptly those employees who have the potential to be directly exposed. Affected employees not engaged in correcting emergency conditions shall be evacuated immediately in the event that an emergency occurs. Means shall also be developed and implemented for alerting other employees who may be exposed as a result of the emergency.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07607, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07609 Exposure monitoring.** (1) General.

(a) Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's exposure to airborne MDA over an 8-hour period. Determination of employee exposure to the STEL shall be made from breathing zone air samples collected over a 15 minute sampling period.

(b) Representative employee exposure shall be determined on the basis of one or more samples representing full shift exposure for each shift for each job classification in each work area where exposure to MDA may occur.

(c) Where the employer can document that exposure levels are equivalent for similar operations in different work shifts, the employer shall only be required to determine representative employee exposure for that operation during one shift.

(2) Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall perform initial monitoring to determine accurately the airborne concentrations of MDA to which employees may be exposed.

(3) Periodic monitoring and monitoring frequency.

(a) If the monitoring required by subsection (2) of this section reveals employee exposure at or above the action level, but at or below the PELs, the employer shall repeat

such representative monitoring for each such employee at least every six months.

(b) If the monitoring required by subsection (2) of this section reveals employee exposure above the PELs, the employer shall repeat such monitoring for each such employee at least every three months.

(c) The employer may alter the monitoring schedule from every three months to every six months for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to below the TWA but above the action level.

(4) Termination of monitoring.

(a) If the initial monitoring required by subsection (2) of this section reveals employee exposure to be below the action level, the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(b) If the periodic monitoring required by subsection (3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(5) Additional monitoring. The employer shall institute the exposure monitoring required under subsections (2) and (3) of this section when there has been a change in production process, chemicals present, control equipment, personnel, or work practices which may result in new or additional exposures to MDA, or when the employer has any reason to suspect a change which may result in new or additional exposures.

(6) Accuracy of monitoring. Monitoring shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of MDA.

(7) Employee notification of monitoring results.

(a) The employer shall, within 15 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.

(b) The written notification required by subdivision (a) of this subsection shall contain the corrective action being taken by the employer to reduce the employee exposure to or below the PELs, wherever the PELs are exceeded.

(8) Visual monitoring. The employer shall make routine inspections of employee hands, face, and forearms potentially exposed to MDA. Other potential dermal exposures reported by the employee must be referred to the appropriate medical personnel for observation. If the employer determines that the employee has been exposed to MDA the employer shall:

(a) Determine the source of exposure;

(b) Implement protective measures to correct the hazard; and

(c) Maintain records of the corrective actions in accordance with WAC 296-62-07631.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07609, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07611 Regulated areas.** (1) Establishment.

(a) Airborne exposures. The employer shall establish regulated areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits.

(b) Dermal exposures. Where employees are subject to dermal exposure to MDA the employer shall establish those work areas as regulated areas.

(2) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.

(3) Access. Access to regulated areas shall be limited to authorized persons.

(4) Personal protective equipment and clothing. Each person entering a regulated area shall be supplied with, and required to use, the appropriate personal protective clothing and equipment in accordance with WAC 296-62-07615 and 296-62-07617.

(5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07611, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07613 Methods of compliance.** (1) Engineering controls and work practices.

(a) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to MDA at or below the PELs except to the extent that the employer can establish that these controls are not feasible or where the provisions of subdivision (b) of this subsection or WAC 296-62-07615(1) apply.

(b) 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 protective devices which comply with the requirements of WAC 296-62-07615.

(2) Compliance program.

(a) The employer shall establish and implement a written program to reduce employee exposure to or below the PELs by means of engineering and work practice controls, as required by subsection (1) of this section, and by use of respiratory protection where permitted under WAC 296-62-076. The program shall include a schedule for periodic maintenance (e.g., leak detection) and shall include the written plan for emergency situations as specified in WAC 296-62-07607.

(b) Upon request this written program shall be furnished for examination and copying to the director, affected employees, and designated employee representatives. The employer shall review and, as necessary, update such plans at least once every 12 months to make certain they reflect the current status of the program.

(3) Employee rotation. Employee rotation shall not be permitted as a means of reducing exposure.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07613, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07615 Respiratory protection.** (1) General. The employer shall provide respirators, and ensure

such representative monitoring for each such employee at least every six months.

(b) If the monitoring required by subsection (2) of this section reveals employee exposure above the PELs, the employer shall repeat such monitoring for each such employee at least every three months.

(c) The employer may alter the monitoring schedule from every three months to every six months for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to below the TWA but above the action level.

(4) Termination of monitoring.

(a) If the initial monitoring required by subsection (2) of this section reveals employee exposure to be below the action level, the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(b) If the periodic monitoring required by subsection (3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(5) Additional monitoring. The employer shall institute the exposure monitoring required under subsections (2) and (3) of this section when there has been a change in production process, chemicals present, control equipment, personnel, or work practices which may result in new or additional exposures to MDA, or when the employer has any reason to suspect a change which may result in new or additional exposures.

(6) Accuracy of monitoring. Monitoring shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of MDA.

(7) Employee notification of monitoring results.

(a) The employer shall, within 15 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.

(b) The written notification required by subdivision (a) of this subsection shall contain the corrective action being taken by the employer to reduce the employee exposure to or below the PELs, wherever the PELs are exceeded.

(8) Visual monitoring. The employer shall make routine inspections of employee hands, face, and forearms potentially exposed to MDA. Other potential dermal exposures reported by the employee must be referred to the appropriate medical personnel for observation. If the employer determines that the employee has been exposed to MDA the employer shall:

(a) Determine the source of exposure;

(b) Implement protective measures to correct the hazard; and

(c) Maintain records of the corrective actions in accordance with WAC 296-62-07631.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07609, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07611 Regulated areas.** (1) Establishment.

(a) Airborne exposures. The employer shall establish regulated areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits.

(b) Dermal exposures. Where employees are subject to dermal exposure to MDA the employer shall establish those work areas as regulated areas.

(2) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.

(3) Access. Access to regulated areas shall be limited to authorized persons.

(4) Personal protective equipment and clothing. Each person entering a regulated area shall be supplied with, and required to use, the appropriate personal protective clothing and equipment in accordance with WAC 296-62-07615 and 296-62-07617.

(5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07611, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07613 Methods of compliance.** (1) Engineering controls and work practices.

(a) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to MDA at or below the PELs except to the extent that the employer can establish that these controls are not feasible or where the provisions of subdivision (b) of this subsection or WAC 296-62-07615(1) apply.

(b) 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 protective devices which comply with the requirements of WAC 296-62-07615.

(2) Compliance program.

(a) The employer shall establish and implement a written program to reduce employee exposure to or below the PELs by means of engineering and work practice controls, as required by subsection (1) of this section, and by use of respiratory protection where permitted under WAC 296-62-076. The program shall include a schedule for periodic maintenance (e.g., leak detection) and shall include the written plan for emergency situations as specified in WAC 296-62-07607.

(b) Upon request this written program shall be furnished for examination and copying to the director, affected employees, and designated employee representatives. The employer shall review and, as necessary, update such plans at least once every 12 months to make certain they reflect the current status of the program.

(3) Employee rotation. Employee rotation shall not be permitted as a means of reducing exposure.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07613, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07615 Respiratory protection.** (1) General. The employer shall provide respirators, and ensure

that they are used, where required by this section. Respirators shall be used in the following circumstances:

(a) During the time period necessary to install or implement feasible engineering and work practice controls;

(b) In work operations for which the employer establishes that engineering and work practice controls are not feasible;

(c) In work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the PEL; and

(d) In emergencies.

(2) Respirator selection.

(a) Where respirators are required or allowed under WAC 296-62-076, the employer shall select and provide, at no cost to the employee, the appropriate respirator as specified in Table 1, and shall assure that the employee uses the respirator provided.

(b) The employer shall select respirators from among those approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health under the provisions of 30 C.F.R. Part 11 and Part E of this chapter.

(c) Any employee who cannot wear a negative pressure respirator shall be given the option of wearing a positive pressure respirator or any supplied-air respirator operated in the continuous flow or pressure demand mode.

(3) Respirator program. The employer shall institute a respiratory protection program in accordance with Part E of this chapter.

(4) Respirator use.

(a) Where air-purifying respirators (cartridge or canister) are used, the employer shall replace the air-purifying element as needed to maintain the effectiveness of the respirator. The employer shall ensure that each cartridge is dated at the beginning of use.

(b) Employees who wear respirators shall be allowed to leave the regulated area to readjust the facepiece or to wash their faces and to wipe clean the facepieces on their respirators in order to minimize potential skin irritation associated with respirator use.

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;<br>(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];<br>(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.

(5) Respirator fit testing.

(a) The employer shall perform and record the results of either quantitative or qualitative fit tests at the time of initial fitting and at least annually thereafter for each employee wearing a negative pressure respirator. The test shall be used to select a respirator facepiece which provides the required protection as prescribed in Table 1.

(b) The employer shall follow the test protocols outlined in Appendix E of this standard for whichever type of fit testing the employer chooses.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07615, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07617 Protective work clothing and equipment.** (1) Provision and use. Where employees are subject to dermal exposure to MDA, where liquids containing MDA can be splashed into the eyes, or where airborne concentrations of MDA are in excess of the PEL, the employer shall provide, at no cost to the employee, and ensure that the employee uses, appropriate protective work clothing and equipment which prevent contact with MDA such as, but not limited to:

(a) Aprons, coveralls, or other full-body work clothing;

(b) Gloves, head coverings, and foot coverings; and

(c) Face shields, chemical goggles; or

(d) Other appropriate protective equipment which comply with WAC 296-24-078.

(2) Removal and storage.

(a) The employer shall ensure that, at the end of their work shift, employees remove MDA-contaminated protective work clothing and equipment that is not routinely removed throughout the day in change rooms provided in accordance with the provisions established for change rooms.

(b) The employer shall ensure that, during their work shift, employees remove all other MDA-contaminated protective work clothing or equipment before leaving a regulated area.

(c) The employer shall ensure that no employee takes MDA-contaminated work clothing or equipment out of the change room, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(d) MDA-contaminated work clothing or equipment shall be placed and stored in closed containers which prevent dispersion of the MDA outside the container.

(e) Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of change rooms or the workplace for cleaning, maintenance, or disposal shall bear labels warning of the hazards of MDA.

(3) Cleaning and replacement.

(a) The employer shall provide the employee with clean protective clothing and equipment. The employer shall

ensure that protective work clothing or equipment required by this paragraph is cleaned, laundered, repaired, or replaced at intervals appropriate to maintain its effectiveness.

(b) The employer shall prohibit the removal of MDA from protective work clothing or equipment by blowing, shaking, or any methods which allow MDA to reenter the workplace.

(c) The employer shall ensure that laundering of MDA-contaminated clothing shall be done so as to prevent the release of MDA in the workplace.

(d) Any employer who gives MDA-contaminated clothing to another person for laundering shall inform such person of the requirement to prevent the release of MDA.

(e) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with MDA of the potentially harmful effects of exposure.

(f) MDA-contaminated clothing shall be transported in properly labeled, sealed, impermeable bags or containers.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07617, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07619 Hygiene facilities and practices.** (1) Change rooms.

(a) The employer shall provide clean change rooms for employees, who must wear protective clothing, or who must use protective equipment because of their exposure to MDA.

(b) Change rooms must be equipped with separate storage for protective clothing and equipment and for street clothes which prevents MDA contamination of street clothes.

(2) Showers.

(a) The employer shall ensure that employees, who work in areas where there is the potential for exposure resulting from airborne MDA (e.g., particulates or vapors) above the action level, shower at the end of the work shift.

(i) Shower facilities required by this section shall comply with WAC 296-24-12009(3).

(ii) The employer shall ensure that employees who are required to shower pursuant to the provisions contained herein do not leave the workplace wearing any protective clothing or equipment worn during the work shift.

(b) Where dermal exposure to MDA occurs, the employer shall ensure that materials spilled or deposited on the skin are removed as soon as possible by methods which do not facilitate the dermal absorption of MDA.

(3) Lunch facilities.

(a) Availability and construction.

(i) Whenever food or beverages are consumed at the worksite and employees are exposed to MDA at or above the PEL or are subject to dermal exposure to MDA the employer shall provide readily accessible lunch areas.

(ii) Lunch areas located within the workplace and in areas where there is the potential for airborne exposure to MDA at or above the PEL shall have a positive pressure, temperature controlled, filtered air supply.

(iii) Lunch areas may not be located in areas within the workplace where the potential for dermal exposure to MDA exists.

(b) The employer shall ensure that employees who have been subjected to dermal exposure to MDA or who have been exposed to MDA above the PEL wash their hands and faces with soap and water prior to eating, drinking, smoking, or applying cosmetics.

(c) The employer shall ensure that employees exposed to MDA do not enter lunch facilities with MDA-contaminated protective work clothing or equipment.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07619, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07621 Communication of hazards to employees.** (1) Signs and labels.

(a) The employer shall post and maintain legible signs demarcating regulated areas and entrances or accessways to regulated areas that bear the following legend:

DANGER MDA MAY CAUSE CANCER LIVER TOXIN
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
MAY BE REQUIRED TO BE WORN IN THIS AREA

(b) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of MDA within the workplace. The labels shall comply with the requirements of WAC 296-62-05411 and shall include the following legend:

(i) For pure MDA

DANGER CONTAINS MDA MAY CAUSE CANCER LIVER TOXIN

(ii) For mixtures containing MDA

DANGER CONTAINS MDA CONTAINS MATERIALS
WHICH MAY CAUSE CANCER LIVER TOXIN

(2) Material safety data sheets (MSDS).

(a) Employers shall obtain or develop, and shall provide access to their employees, to a material safety data sheet (MSDS) for MDA. In meeting this obligation, employers shall make appropriate use of the information found in Appendices A and B.

(b) Employers who are manufacturers or importers shall:

(i) Comply with subdivision (1)(b) of this section as appropriate; and

(ii) Comply with the requirement in WISHA hazard communication standard, WAC 296-62-054, that they deliver to downstream employers an MSDS for MDA.

(3) Information and training.

(a) The employer shall provide employees with information and training on MDA, in accordance with WAC 296-62-054 through 296-62-05415, at the time of initial assignment and at least annually thereafter.

(b) In addition to the information required under WAC 296-62-054, the employer shall:

(i) Provide an explanation of the contents of WAC 296-62-076, including Appendices A and B, and indicate to employees where a copy of the standard is available;

(ii) Describe the medical surveillance program required under WAC 296-62-07625, and explain the information contained in Appendix C; and

(iii) Describe the medical removal provision required under WAC 296-62-07625.

(4) Access to training materials.

(a) The employer shall make readily available to all affected employees, without cost, all written materials relating to the employee training program, including a copy of this regulation.

(b) The employer shall provide to the director, upon request, all information and training materials relating to the employee information and training program.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07621, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07623 Housekeeping.** (1) All surfaces shall be maintained as free as practicable of visible accumulations of MDA.

(2) The employer shall institute a program for detecting MDA leaks, spills, and discharges, including regular visual inspections of operations involving liquid or solid MDA.

(3) All leaks shall be repaired and liquid or dust spills cleaned up promptly.

(4) Surfaces contaminated with MDA may not be cleaned by the use of compressed air.

(5) Shoveling, dry sweeping, and other methods of dry clean-up of MDA may be used where HEPA-filtered vacuuming and/or wet cleaning are not feasible or practical.

(6) Waste, scrap, debris, bags, containers, equipment, and clothing contaminated with MDA shall be collected and disposed of in a manner to prevent the reentry of MDA into the workplace.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07623, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07625 Medical surveillance.** (1) General.

(a) The employer shall make available a medical surveillance program for employees exposed to MDA:

(i) Employees exposed at or above the action level for 30 or more days per year;

(ii) Employees who are subject to dermal exposure to MDA for 15 or more days per year;

(iii) Employees who have been exposed in an emergency situation;

(iv) Employees whom the employer, based on results from compliance with WAC 296-62-07609(8), has reason to believe are being dermally exposed; and

(v) Employees who show signs or symptoms of MDA exposure.

(b) The employer shall ensure that all medical examinations and procedures are performed by, or under the supervision of, a licensed physician, at a reasonable time and place, and provided without cost to the employee.

(2) Initial examinations.

(a) Within 150 days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by subdivision (1)(a) of this section with a medical examination including the following elements:

(i) A detailed history which includes:

(A) Past work exposure to MDA or any other toxic substances;

(B) A history of drugs, alcohol, tobacco, and medication routinely taken (duration and quantity); and

(C) A history of dermatitis, chemical skin sensitization, or previous hepatic disease.

(ii) A physical examination which includes all routine physical examination parameters, skin examination, and signs of liver disease.

(iii) Laboratory tests including:

(A) Liver function tests; and

(B) Urinalysis.

(iv) Additional tests as necessary in the opinion of the physician.

(b) No initial medical examination is required if adequate records show that the employee has been examined in accordance with the requirements of WAC 296-62-076 within the previous six months prior to the effective date of this standard or prior to the date of initial assignment.

(3) Periodic examinations.

(a) The employer shall provide each employee covered by WAC 296-62-076 with a medical examination at least annually following the initial examination. These periodic examinations shall include at least the following elements:

(i) A brief history regarding any new exposure to potential liver toxins, changes in drug, tobacco, and alcohol intake, and the appearance of physical signs relating to the liver and the skin;

(ii) The appropriate tests and examinations including liver function tests and skin examinations; and

(iii) Appropriate additional tests or examinations as deemed necessary by the physician.

(b) If in the physicians' opinion the results of liver function tests indicate an abnormality, the employee shall be removed from further MDA exposure in accordance with WAC 296-62-07627 and 296-62-07629. Repeat liver function tests shall be conducted on advice of the physician.

(4) Emergency examinations. If the employer determines that the employee has been exposed to a potentially hazardous amount of MDA in an emergency situation as addressed in WAC 296-62-07607, the employer shall provide medical examinations in accordance with subsection (3) of this section. If the results of liver function testing indicate an abnormality, the employee shall be removed in accordance with WAC 296-62-07627 and 296-62-07629. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and on the advice of the physician, no additional testing is required.

(5) Additional examinations. Where the employee develops signs and symptoms associated with exposure to MDA, the employer shall provide the employee with an additional medical examination including a liver function test. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and, on the advice of the physician, no additional testing is required.

(6) Multiple physician review mechanism.

(a) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under WAC 296-62-076, and the employee has signs or symptoms of occupational exposure to MDA (which could include an abnormal liver function test), and the employee disagrees with the opinion of the examining physician, and this opinion could affect the employee's job status, the employee may designate an appropriate, mutually acceptable 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 WAC 296-62-076. 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 resolve quickly 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.

(7) Information provided to the examining and consulting physicians.

(a) 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 potential exposure to MDA;

(iii) The employee's current actual or representative MDA 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.

(b) The employer shall provide the foregoing information to a second physician under this section upon request either by the second physician or by the employee.

(8) Physician's written opinion.

(a) For each examination under WAC 296-62-076, the employer shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt. The written opinion shall include the following:

(i) The occupationally-pertinent results of the medical examination and tests;

(ii) The physician's opinion concerning whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of health from exposure to MDA;

(iii) The physician's recommended limitations upon the employee's exposure to MDA or upon the employee's use of protective clothing or equipment and 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 resulting from MDA exposure which require further explanation or treatment.

(b) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07625, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07627 Medical removal—Temporary medical removal of an employee.** Temporary medical removal of an employee.

(1) Temporary removal resulting from occupational exposure. The employee shall be removed from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur, following an initial examination (WAC 296-62-07625(2)), periodic examinations (WAC 296-62-07625(3)), an emergency situation (WAC 296-62-07625(4)), or an additional examination (WAC 296-62-07625(5)) in the following circumstances:

(a) When the employee exhibits signs and/or symptoms indicative of acute exposure to MDA; or

(b) When the examining physician determines that an employee's abnormal liver function tests are not associated with MDA exposure but that the abnormalities may be exacerbated as a result of occupational exposure to MDA.

(c) Temporary removal due to a final medical determination.

(i) The employer shall remove an employee from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur, on each occasion that there is a final medical 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 MDA.

(ii) For the purposes of WAC 296-62-076, the phrase "final medical determination" shall mean the outcome of the physician review mechanism used pursuant to the medical surveillance provisions of this section.

(iii) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to MDA, the employer shall implement and act consistent with the recommendation.

(2) Return of the employee to former job status.

(a) The employer shall return an employee to his or her former job status:

(i) When the employee no longer shows signs or symptoms of exposure to MDA or upon the advice of the physician.

(ii) 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 MDA.

(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.

(3) 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.

(4) Employer options pending a final medical determination. Where the physician review mechanism used pursuant to the medical surveillance provisions of WAC 296-62-076, 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 MDA, 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, and end any special protective measures provided to 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.

(i) If 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) If the employee has been on removal status for the preceding six months as a result of exposure to MDA, then the employer shall await a final medical determination.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07627, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07629 Medical removal protection benefits.** (1) Provisions of medical removal protection benefits. The employer shall provide to an employee up to six months of medical removal protection benefits on each occasion that an employee is removed from exposure to MDA or otherwise limited pursuant to this section.

(2) 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 MDA or otherwise limited.

(3) Follow-up medical surveillance during the period of employee removal or limitations. During the period of time that an employee is removed from normal exposure to MDA 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 WAC 296-62-076.

(4) Workers' compensation claims. If a removed employee files a claim for workers' compensation payments for an MDA-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.

(5) 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 non-MDA-related employment with any employer made possible by virtue of the employee's removal.

(6) Employees who do not recover within the 6 months of removal. The employer shall take the following measures with respect to any employee removed from exposure to MDA:

(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; and

(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 abnormal liver function test, 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 MDA removal criteria provided by WAC 296-62-076.

(7) Voluntary removal or restriction of an employee. Where an employer, although not required by WAC 296-62-076 to do so, removes an employee from exposure to MDA or otherwise places limitations on an employee due to the effects of MDA exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by this section.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07629, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07631 Recordkeeping.** (1) Monitoring data for exempted employers.

(a) Where as a result of the initial monitoring the processing, use, or handling of products made from or containing MDA are exempted from other requirements of this section under WAC 296-62-07601(2), the employer shall establish and maintain an accurate record of monitoring relied on in support of the exemption.

(b) This record shall include at least the following information:

(i) The product qualifying for exemption;

(ii) The source of the monitoring data (e.g., was monitoring performed by the employer or a private contractor);

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of MDA;

(iv) A description of the operation exempted and how the data support the exemption (e.g., are the monitoring data representative of the conditions at the affected facility); and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(2) Objective data for exempted employers.

(a) Where the processing, use, or handling of products made from or containing MDA are exempted from other requirements of WAC 296-62-076 under WAC 296-62-07601, the employer shall establish and maintain an accurate record of objective data relied upon in support of the exemption.

(b) This record shall include at least the following information:

(i) The product qualifying for exemption;

(ii) The source of the objective data;

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of MDA;

(iv) A description of the operation exempted and how the data support the exemption; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(3) Exposure measurements.

(a) The employer shall establish and maintain an accurate record of all measurements required by WAC 296-62-07609, in accordance with Part B of this chapter.

(b) This record shall include:

(i) The dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;

(ii) Identification of the sampling and analytical methods used;

(iii) A description of the type of respiratory protective devices worn, if any; and

(iv) 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.

(c) The employer shall maintain this record for at least 30 years, in accordance with Part B of this chapter.

(4) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance required by WAC 296-62-07625, 296-62-07627, and 296-62-07629, in accordance with Part B of this chapter.

(b) This record shall include:

(i) The name, Social Security number, and description of the duties of the employee;

(ii) The employer's copy of the physician's written opinion on the initial, periodic, and any special examinations, including results of medical examination and all tests, opinions, and recommendations;

(iii) Results of any airborne exposure monitoring done for that employee and the representative exposure levels supplied to the physician; and

(iv) Any employee medical complaints related to exposure to MDA.

(c) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(i) A copy of this standard and its appendices, except that the employer may keep one copy of the standard and its appendices for all employees provided the employer references the standard and its appendices in the medical surveillance record of each employee;

(ii) A copy of the information provided to the physician as required by any sections in the regulatory text;

(iii) A description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to the information;

(iv) A copy of the employee's medical and work history related to exposure to MDA.

(d) The employer shall maintain this record for at least the duration of employment plus 30 years, in accordance with Part B of this chapter.

(5) Medical removals.

(a) The employer shall establish and maintain an accurate record for each employee removed from current exposure to MDA pursuant to WAC 296-62-07625, 296-62-07627, and 296-62-07629.

(b) Each record shall include:

(i) The name and Social Security number of the employee;

(ii) The date of each occasion that the employee was removed from current exposure to MDA as well as the corresponding date on which the employee was returned to his or her former job status;

(iii) A brief explanation of how each removal was or is being accomplished; and

(iv) A statement with respect to each removal indicating the reason for the removal.

(c) The employer shall maintain each medical removal record for at least the duration of an employee's employment plus 30 years.

(6) Availability.

(a) The employer shall assure that records required to be maintained by WAC 296-62-076 shall be made available, upon request, to the director for examination and copying.

(b) Employee exposure monitoring records required by WAC 296-62-076 shall be provided upon request for examination and copying to employees, employee representatives, and the director in accordance with the applicable sections of WAC 296-62-054.

(c) Employee medical records required by this section 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 Part B of this chapter.

(7) Transfer of records.

(a) The employer shall comply with the requirements involving transfer of records set forth in WAC 296-62-05215.

(b) 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 90 days prior to disposal, and transmit the records to the director if so requested by the director within that period.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07631, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07633 Observation of monitoring.** (1) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe the measuring or monitoring of employee exposure to MDA conducted pursuant to WAC 296-62-07609.

(2) Observation procedures. When observation of the measuring or monitoring of employee exposure to MDA 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.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07633, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07635 Effective date.** This standard shall become effective March 15, 1993.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07635, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07637 Appendices.** The information contained in Appendices A, B, C, and D of WAC 296-62-076 is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation. The protocols for respiratory fit testing in Appendix E of WAC 296-62-076 are mandatory.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07637, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07639 Startup dates.** Compliance with all obligations of this standard commence on the effective date except as follows:

(1) Initial monitoring under WAC 296-62-07609(2) of WAC 296-62-076 shall be completed as soon as possible but no later than June 13, 1993.

(2) Medical examinations under WAC 296-62-07625, 296-62-07627, and 296-62-07629 shall be completed as soon as possible but no later than August 14, 1993.

(3) Emergency plans required by WAC 296-62-07607 shall be provided and available for inspection and copying as soon as possible but no later than July 13, 1993.

(4) Initial training and education shall be completed as soon as possible but no later than July 13, 1993.

(5) Hygiene and lunchroom facilities under WAC 296-62-07619 shall be in operation as soon as possible but no later than March 15, 1994.

(6) Respiratory protection required by WAC 296-62-07615 shall be provided as soon as possible but no later than July 13, 1993.

(7) Written compliance plans required by WAC 296-62-07613(2) shall be completed and available for inspection and copying as soon as possible but no later than July 13, 1993.

(8) WISHA shall enforce the permissible exposure limits in WAC 296-62-07605 no earlier than July 13, 1993.

(9) Engineering controls needed to achieve the PELs must be in place March 15, 1993.

(10) Personal protective clothing required by WAC 296-62-07617 shall be available July 13, 1993.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07639, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07654 Appendix A to WAC 296-62-076—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 have the joint Mine Safety and Health Administration and

National Institute for Occupational Safety and Health (NIOSH) seal of approval, 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: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07654, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07656 Appendix B to WAC 296-62-076—Substance technical guidelines, MDA.** (1) Identification.

(a) Substance identification. Synonyms: CAS No. 101-77-9. 4,4'-methylenedianiline; 4,4'-methylenebisaniline; methylenedianiline; dianilinomethane.

(b) Formula: $C_{13}H_{14}N_2$.

(2) Physical data.

(a) Appearance and odor: White to tan solid; amine odor.

(b) Molecular weight: 198.26.

(c) Boiling point: 398-399 degrees C. at 760 mm Hg.

(d) Melting point: 88-93 degrees C. (190-100 degrees F.).

(e) Vapor pressure: 9 mmHg at 232 degrees C.

(f) Evaporation rate (n-butyl acetate = 1): Negligible.

(g) Vapor density (Air=1): Not applicable.

(h) Volatile fraction by weight: Negligible.

(i) Specific gravity (Water=1): Slight.

(j) Heat of combustion: -8.40 kcal/g.

(k) Solubility in water: Slightly soluble in cold water, very soluble in alcohol, benzene, ether, and many organic solvents.

(3) Fire, explosion, and reactivity hazard data.

(a) Flash point: 190 degrees C. (374 degrees F.) Setaflash closed cup.

(b) Flash point: 226 degrees C. (439 degrees F.) Cleveland open cup.

(c) Extinguishing media: Water spray; dry chemical; carbon dioxide.

(d) Special fire fighting procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

(e) Unusual fire and explosion hazards: Fire or excessive heat may cause production of hazardous decomposition products.

(4) Reactivity data.

(a) Stability: Stable.

(b) Incompatibility: Strong oxidizers.

(c) Hazardous decomposition products: As with any other organic material, combustion may produce carbon monoxide. Oxides of nitrogen may also be present.

(d) Hazardous polymerization: Will not occur.

(5) Spill and leak procedures.

(a) Sweep material onto paper and place in fiber carton.

(b) Package appropriately for safe feed to an incinerator or dissolve in compatible waste solvents prior to incineration.

(c) Dispose of in an approved incinerator equipped with afterburner and scrubber or contract with licensed chemical waste disposal service.

(d) Discharge treatment or disposal may be subject to federal, state, or local laws.

(e) Wear appropriate personal protective equipment.

(6) Special storage and handling precautions.

(a) High exposure to MDA can occur when transferring the substance from one container to another. Such operations should be well ventilated and good work practices must be established to avoid spills.

(b) Pure MDA is a solid with a low vapor pressure. Grinding or heating operations increase the potential for exposure.

(c) Store away from oxidizing materials.

(d) Employers shall advise employees of all areas and operations where exposure to MDA could occur.

(7) Housekeeping and hygiene facilities.

(a) The workplace should be kept clean, orderly, and in a sanitary condition. The employer should institute a leak and spill detection program for operations involving MDA in order to detect sources of fugitive MDA emissions.

(b) Adequate washing facilities with hot and cold water are to be provided and maintained in a sanitary condition. Suitable cleansing agents should also be provided to assure the effective removal of MDA from the skin.

(8) Common operations. Common operations in which exposure to MDA is likely to occur include the following: Manufacture of MDA; manufacture of methylene diisocyanate; curing agent for epoxy resin structures; wire coating operations; and filament winding.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07656, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07658 Appendix C to WAC 296-62-076—Medical surveillance guidelines for MDA.** (1) Route of entry:

Inhalation; skin absorption; ingestion. MDA can be inhaled, absorbed through the skin, or ingested.

(2) Toxicology:

MDA is a suspect carcinogen in humans. There are several reports of liver disease in humans and animals resulting from acute exposure to MDA. A well documented case of an acute cardiomyopathy secondary to exposure to MDA is on record. Numerous human cases of hepatitis secondary to MDA are known. Upon direct contact MDA may also cause damage to the eyes. Dermatitis and skin sensitization have been observed. Almost all forms of acute environmental hepatic injury in humans involve the hepatic parenchyma and produce hepatocellular jaundice. This agent produces intrahepatic cholestasis. The clinical picture consists of cholestatic jaundice, preceded or accompanied by abdominal pain, fever, and chills. Onset in about 60 percent of all observed cases is abrupt with severe abdominal pain. In about 30 percent of observed cases, the illness presented and evolved more slowly and less dramatically, with only slight abdominal pain. In about 10 percent of the cases only jaundice was evident. The cholestatic nature of the jaundice is evident in the prominence of itching, the histologic predominance of bile stasis, and portal inflammatory infiltration, accompanied by only slight parenchymal injury in most cases, and by the moderately elevated transaminase values. Acute, high doses, however, have been known to cause hepatocellular damage resulting in elevated SGPT, SGOT, alkaline phosphatase, and bilirubin.

Absorption through the skin is rapid. MDA is metabolized and excreted over a 48-hour period. Direct contact may be irritating to the skin, causing dermatitis. Also MDA which is deposited on the skin is not thoroughly removed through washing.

MDA may cause bladder cancer in humans. Animal data supporting this assumption is not available nor is conclusive human data. However, human data collected on workers at a helicopter manufacturing facility where MDA is used suggests a higher incidence of bladder cancer among exposed workers.

(3) Signs and symptoms:

Skin may become yellow from contact with MDA.

Repeated or prolonged contact with MDA may result in recurring dermatitis (red-itchy, cracked skin) and eye irritation. Inhalation, ingestion, or absorption through the skin at high concentrations may result in hepatitis, causing symptoms such as fever and chills, nausea and vomiting, dark urine, anorexia, rash, right upper quadrant pain, and jaundice. Corneal burns may occur when MDA is splashed in the eyes.

(4) Treatment of acute toxic effects/emergency situation:

If MDA gets into the eyes, immediately wash eyes with large amounts of water. If MDA is splashed on the skin, immediately wash contaminated skin with mild soap or detergent. Employee should be removed from exposure and given proper medical treatment. Medical tests required under the emergency section of the medical surveillance subsection (13)(d) must be conducted.

If the chemical is swallowed do not induce vomiting but remove by gastric lavage.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07658, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07660 Appendix D to WAC 296-62-076—Sampling and analytical methods for MDA monitoring and measurement procedures.** Measurements taken for the purpose of determining employee exposure to MDA are best taken so that the representative average 8-hour exposure may be determined from a single 8-hour sample or two

4-hour samples. Short-time interval samples (or grab samples) may also be used to determine average exposure level if a minimum of five measurements are taken in a random manner over the 8-hour work shift. Random sampling means that any portion of the work shift has the same chance of being sampled as any other. The arithmetic average of all such random samples taken on one work shift is an estimate of an employee's average level of exposure for that work shift. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee).

There are a number of methods available for monitoring employee exposures to MDA. The method WISHA currently uses is included below.

The employer, however, has the obligation of selecting any monitoring method which meets the accuracy and precision requirements of the standard under his/her unique field conditions. The standard requires that the method of monitoring must have an accuracy, to a 95 percent confidence level, of not less than plus or minus 25 percent for the select PEL.
WISHA methodology.

Sampling procedure.

Apparatus:
Samples are collected by use of a personal sampling pump that can be calibrated within $\pm 5$ percent of the recommended flow rate with the sampling filter in line.

Samples are collected on 37 mm Gelman type A/E glass fiber filters treated with sulfuric acid. The filters are prepared by soaking each filter with 0.5 mL of 0.26N $H_2SO_4$. (0.26 N $H_2SO_4$ can be prepared by diluting 1.5 mL of 36N $H_2SO_4$ to 200 mL with deionized water.) The filters are dried in an oven at 100 degrees C. for one hour and then assembled into three-piece 37 mm polystyrene cassettes without backup pads. The front filter is separated from the back filter by a polystyrene spacer. The cassettes are sealed with shrink bands and the ends are plugged with plastic plugs.

After sampling, the filters are carefully removed from the cassettes and individually transferred to small vials containing approximately 2 mL deionized water. The vials must be tightly sealed. The water can be added before or after the filters are transferred. The vials must be sealable and capable of holding at least 7 mL of liquid. Small glass scintillation vials with caps containing Teflon liners are recommended.

Reagents:
Deionized water is needed for addition to the vials.

Sampling technique:
Immediately before sampling, remove the plastic plugs from the filter cassettes.

Attach the cassette to the sampling pump with flexible tubing and place the cassette in the employee's breathing zone.

After sampling, seal the cassettes with plastic plugs until the filters are transferred to the vials containing deionized water.

At some convenient time within 10 hours of sampling, transfer the sample filters to vials.

Seal the small vials lengthwise.

Submit at least one blank filter with each sample set. Blanks should be handled in the same manner as samples, but no air is drawn through them.

Record sample volumes (in L of air) for each sample, along with any potential interferences.

Retention efficiency:
A retention efficiency study was performed by drawing 100 L of air (80 percent relative humidity) at 1 L/min through sample filters that had been spiked with 0.814 microgram MDA. Instead of using backup pads, blank acid-treated filters were used as backups in each cassette. Upon analysis, the top filters were found to have an average of 91.8 percent of the spiked amount. There was no MDA found on the bottom filters, so the amount lost was probably due to the slight instability of the MDA salt.

Extraction efficiency:
The average extraction efficiency for six filters spiked at the target concentration is 99.6 percent.

The stability of extracted and derivatized samples was verified by reanalyzing the above six samples the next day using fresh standards. The average extraction efficiency for the reanalyzed samples is 98.7 percent.

Recommended air volume and sampling rate:
The recommended air volume is 100 L.
The recommended sampling rate is 1 L/min.

Interferences (sampling):
MDI appears to be a positive interference. It was found that when MDI was spiked onto an acid-treated filter, the MDI converted to MDA after air was drawn through it.

Suspected interferences should be reported to the laboratory with submitted samples.

Safety precautions (sampling):
Attach the sampling equipment to the employees so that it will not interfere with work performance or safety.

Follow all safety procedures that apply to the work area being sampled.

Analytical procedure:
Apparatus: The following are required for analysis.

A GC equipped with an electron capture detector. For this evaluation a Hewlett Packard 5880 Gas Chromatograph equipped with a Nickel 63 High Temperature Electron Capture Detector and a Linearizer was used.

A GC column capable of separating the MDA derivative from the solvent and interferences. A 6 ft X 2 mm ID glass column packed with 3 percent OV-101 coated on 100/120 Gas Chrom Q or a 25 meter DB-1 or DB-5 capillary column is recommended for this evaluation.

A electronic integrator or some other suitable means of measuring peak areas or heights.

Small resealable vials with Teflon-lined caps capable of holding 4 mL.

A dispenser or pipet for toluene capable of delivering 2.0 mL.

Pipets (or repipets with plastic or Teflon tips) capable of delivering 1 mL for the sodium hydroxide and buffer solutions.

A repipet capable of delivering 25 micro-L HFAA.

Syringes for preparation of standards and injection of standards and samples into a GC.

Volumetric flasks and pipets to dilute the pure MDA in preparation of standards.

Disposable pipets to transfer the toluene layers after the samples are extracted.

Reagents:
0.5 NaOH prepared from reagent grade NaOH.

Toluene, pesticide grade. Burdick and Jackson distilled in glass toluene was used.

Heptafluorobutyric acid anhydride (HFAA). HFAA from Pierce Chemical Company was used.

pH 7.0 phosphate buffer, prepared from 136 g potassium dihydrogen phosphate and 1 L deionized water. The pH is adjusted to 7.0 with saturated sodium hydroxide solution.

4,4'-Methylenedianiline (MDA), reagent grade.

Standard preparation:
Concentrated stock standards are prepared by diluting pure MDA with toluene. Analytical standards are prepared by injecting uL amounts of diluted stock standards into vials that contain 2.0 mL toluene.

25 µL HFAA are added to each vial and the vials are capped and shaken for 10 seconds.

After 10 min, 1 mL of buffer is added to each vial.

The vials are recapped and shaken for 10 seconds.

After allowing the layers to separate, aliquots of the toluene (upper) layers are removed with a syringe and analyzed by GC.

Analytical standard concentrations should bracket sample concentrations. Thus, if samples fall out of the range of prepared standards, additional standards must be prepared to ascertain detector response.

Sample preparation:
The sample filters are received in vials containing deionized water.

1 mL of 0.5N NaOH and 2.0 mL toluene are added to each vial.

The vials are recapped and shaken for 10 min.

After allowing the layers to separate, approximately 1 mL aliquots of the toluene (upper) layers are transferred to separate vials with clean disposable pipets.

The toluene layers are treated and analyzed.

Analysis:
GC conditions
Zone temperatures:
Column—220 degrees C.
Injector—235 degrees C.
Detector—335 degrees C.
C Gas flows, $N_2$ Column—30 mL/min
He Column 0.9 mL/min. (capillary) with 30 mL/min. $A_rCH_4$ (95/5) makeup gas
Injection volume: 5.0 uL
Column: 6 ft X 1/8 in ID glass, 3% OV-101 on 100/120 Gas Chrom Q or 25 meter x .25 mm DB-1 or DB-5 capillary
Retention time of MDA derivative: 2.5 to 3.5, depending on column and flow

Chromatogram:
Peak areas or heights are measured by an integrator or other suitable means.

A calibration curve is constructed by plotting response (peak areas or heights) of standard injections versus ug of MDA per sample. Sample concentrations must be bracketed by standards.

Interferences (analytical):
Any compound that gives an electron capture detector response and has the same general retention time as the HFAA derivative of MDA is a potential interference. Suspected interferences reported to the laboratory with submitted samples by the industrial hygienist must be considered before samples are derivatized.

GC parameters may be changed to possibly circumvent interferences.

Retention time on a single column is not considered proof of chemical identity. Analyte identity should be confirmed by GC/MS if possible.

Calculations:
The analyte concentration for samples is obtained from the calibration curve in terms of ug MDA per sample. The extraction efficiency is 100 percent. If any MDA is found on the blank, that amount is subtracted from the sample amounts. The air concentrations are calculated using the following formulae: Microgram/$m^3$=(microgram MDA per sample) (1000)/(L of air sampled) ppb=(microgram/$m^3$) (24.46)/(198.3)=(microgram/$m^3$)(0.1233) where 24.46 is the molar volume at 25 degrees C. and 760 mm Hg.

Safety precautions (analytical):
Avoid skin contact and inhalation of all chemicals.

Restrict the use of all chemicals to a fume hood if possible.

Wear safety glasses and a lab coat at all times while in the lab area.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07660, filed 2/3/93, effective 3/15/93.]

**WAC 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.]

**WAC 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.]

**WAC 296-62-07666 Appendix E-1-a—Isoamyl acetate (banana oil) protocol.** (1) Odor threshold screening.

(a) Three 1-liter glass jars with metal lids (e.g., Mason or Ball jars) are required.

(b) Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C. shall be used for the solutions.

(c) The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 cc of pure IAA to 800 cc of odor-free water in a 1-liter jar and shaking for 30 seconds. This solution shall be prepared new at least weekly.

(d) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated so that circulation of the test solution does not occur and cross contaminate the different testing sites.

(e) The odor test solution is prepared in a second jar by placing 0.4 cc of the stock solution into 500 cc of odor-free water using a clean dropper or pipette. Shake for 30 seconds and allow to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution may be used for only one day.

(f) A test blank is prepared in a third jar by adding 500 cc of odor-free water.

(g) The odor test and test blank jars shall be labelled 1 and 2 for jar identification.

(h) The following instructions shall be typed on a card and placed 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."

(i) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed in order to prevent olfactory fatigue in the subject.

(j) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test may not be used.

(k) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(2) Respirator selection.

(a) The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. The selection shall include at least three sizes of elastomeric half facepieces, from at least two manufacturers.

(b) The selection process shall be conducted in a room separate from the fit-test chamber to prevent odor fatigue. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a "comfortable" respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, as it is only a review.

(c) The test subject should understand that the employee is being asked to select the respirator which provides the most comfortable fit.

(d) The test subject holds each facepiece up to the face and eliminates those which obviously do not give a comfortable fit. Normally, selection will begin with a half-mask and if a comfortable fit cannot be found, the subject will be asked to test the full facepiece respirators. (A small percentage of users will not be able to wear any half-mask.)

(e) The more comfortable facepieces are noted; the most comfortable mask is donned and worn at least five minutes to assess comfort. All donning and adjustments of the facepiece shall be performed by the test subject without assistance from the test conductor or other person. Assistance in assessing comfort can be given by discussing the points in subdivision (f) below. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and adjust the straps each time to become adept at setting proper tension on the straps.

(f) Assessment of comfort shall include reviewing the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator after donning:

* Positioning of mask on nose.
* Room for eye protection.
* Room to talk.
* Positioning mask on face and cheeks.

(g) The following criteria shall be used to help determine the adequacy of the respirator fit:

* Chin properly placed.
* Strap tension.
* Fit across nose bridge.
* Distance from nose to chin.
* Tendency to slip.
* Self-observation in mirror.

(h) The test subject shall perform the conventional negative- or positive-pressure fit checks (e.g., see ANSI Z88.2-1980A7). Before beginning the negative- or positive-pressure test, the subject shall be told to "seat" the mask by rapidly moving the head from side to side and up and down, while taking a few deep breaths.

(i) The test subject is now ready for fit testing.

(j) After passing the fit test, the test subject shall be questioned again regarding the comfort of the respirator. If the respirator has become uncomfortable, another model of respirator shall be tried.

(k) The employee shall be given the opportunity to select a different facepiece and to be retested if the chosen facepiece becomes increasingly uncomfortable at any time.

(3) Fit test.

(a) The fit test chamber shall be similar to a clear 55 gallon drum liner suspended inverted over a 2-foot diameter frame, so that the top of chamber is about 6 inches above the test subject's head. The inside top center of the chamber shall have a small hook attached.

(b) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors. The cartridges or canis-

ters shall be replaced as necessary to maintain the effectiveness of the respirator.

(c) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(d) A copy of the following test exercises and Rainbow Passage shall be taped to the inside of the test chamber.

(e) Test exercises:

(i) Breathe normally.

(ii) Breathe deeply. Be certain breaths are deep and regular.

(iii) Turn head all the way from one side to the other. Inhale on each side. Be certain movement is complete. Do not bump the respirator against the shoulders.

(iv) Nod head up and down. Inhale when head is in the full up position (looking toward ceiling). Be certain motions are complete and made about every second. Do not bump the respirator on the chest.

(v) Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it aloud will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may also be used.

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.

(vi) Jog in place.

(vii) Breathe normally.

(f) Each test subject shall wear the respirator for at least 10 minutes before starting the fit test.

(g) Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel or other porous absorbent single ply material, folded in half and wetted with three-quarters of one cc of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber.

(h) Allow two minutes for the IAA test concentration to be reached before starting the fit test exercises.

(i) Each exercise described in subdivision (e) above shall be performed for at least one minute.

(j) If at any time during the test, the subject detects the banana-like odor of IAA, the test has failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(k) If the test is failed, the subject shall return to the selection room and remove the respirator, repeat the odor sensitivity test, select and put on another respirator, return to the test chamber, and again begin the procedure described in subdivisions (d) through (i) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait about 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(l) If a person cannot pass the fit test described above wearing a half-mask respirator from the available selection, full facepiece models must be used.

(m) When a respirator is found that passes the test, the subject must break the faceseal and take a breath before exiting the chamber. This is to assure that the reason the test subject is not smelling the IAA is the good fit of the respirator facepiece seal and not olfactory fatigue.

(n) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test. To keep the area from becoming contaminated, the used towels shall be kept in a self-sealing bag so there is no significant IAA concentration buildup in the test chamber during subsequent tests.

(o) Persons who have successfully passed this fit test with a half-mask respirator may be assigned the use of the test respirator in atmospheres with up to 10 times the PEL. In atmospheres greater than 10 times, and less than 50 times the PEL (up to 50 ppm), the subject must pass the IAA test using a full face negative pressure respirator. (The concentration of the IAA inside the test chamber must be increased by five times for QLFT of the full facepiece.)

(p) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(q) If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as a powered air-purifying respirator, supplied air respirator, or self-contained breathing apparatus.

(r) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.

(s) Qualitative fit testing shall be repeated at least every 12 months.

(t) In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

(i) Weight change of 20 pounds or more;

(ii) Significant facial scarring in the area of the facepiece seal;

(iii) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures;

(iv) Reconstructive or cosmetic surgery; or

(v) Any other condition that may interfere with facepiece sealing.

(4) Recordkeeping. A summary of all test results shall be maintained by the employer for 3 years. The summary shall include:

(a) Name of test subject.

(b) Date of testing.

(c) Name of the test conductor.

(d) Respirators selected (indicate manufacturer, model, size, and approval number).

(e) Testing agent.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07666, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07668 Appendix E-1-b—Saccharin solution aerosol protocol.** (1) Respirator selection. Respirators shall be selected as described in WAC 296-62-07666(2) Appendix E-1-a (respirator selection), except that each respirator shall be equipped with a particulate filter.

(2) Taste threshold screening.

(a) An enclosure placed over the head and shoulders shall be used for threshold screening (to determine if the individual can taste saccharin) and for fit testing. The enclosure shall be approximately 12 inches in diameter by 14 inches tall with at least the front clear to allow free movement of the head when a respirator is worn.

(b) The test enclosure shall have a three-quarter inch hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(c) The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.

(d) During the threshold screening test, the test subject shall don the test enclosure and breathe with open mouth with tongue extended.

(e) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(f) The threshold check solution consists of 0.83 grams of sodium saccharin, USP in water. It can be prepared by putting 1 cc of the test solution (see subdivision (3)(g)) in 100 cc of water.

(g) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then is released and allowed to fully expand.

(h) Ten squeezes of the nebulizer bulb are repeated rapidly and then the test subject is asked whether the saccharin can be tasted.

(i) If the first response is negative, ten more squeezes of the nebulizer bulb are repeated rapidly and the test subject is again asked whether the saccharin can be tasted.

(j) If the second response is negative ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin can be tasted.

(k) The test conductor will take note of the number of squeezes required to elicit a taste response.

(l) If the saccharin is not tasted after 30 squeezes, subdivision (j), the saccharin fit test cannot be performed on the test subject.

(m) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(n) Correct use of the nebulizer means that approximately 1 cc of liquid is used at a time in the nebulizer body.

(o) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least every four hours.

(3) Fit test.

(a) The test subject may not eat, drink (except plain water), or chew gum for 15 minutes before the test.

(b) The test subject shall don and adjust the respirator without assistance from any person.

(c) The fit test uses the same enclosure described in subsection (2) of this section.

(d) Each test subject shall wear the respirator for at least 10 minutes before starting the fit test.

(i) This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of cooperation, and the purpose for the head exercises; or to demonstrate some of the exercises.

(ii) The test subject shall perform the conventional negative- or positive-pressure fit tests (see ANSI Z88.2 1980 A7).

(e) The test subject shall enter the enclosure while wearing the respirator selected in WAC 296-62-07666(2). This respirator shall be properly adjusted and equipped with a particulate filter.

(f) A second DeVilbiss Model 40 Inhalation Medication Nebulizer is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(g) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 cc of warm water.

(h) As before, the test subject shall breathe with mouth open and tongue extended.

(i) The nebulizer is inserted into the hole in the front of the enclosure and the fit test solution is sprayed into the enclosure using the same technique as for the taste threshold screening and the same number of squeezes required to elicit a taste response in the screening. (See subdivisions (2)(h) through (j).)

(j) After generation of the aerosol read the following instructions to the test subject. The test subject shall perform the exercises for one minute each.

(i) Breathe normally.

(ii) Breathe deeply. Be certain breaths are deep and regular.

(iii) Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.

(iv) Nod head up and down. Be certain motions are complete. Inhale when head is in the full up position (when looking toward the ceiling). Do not bump the respirator on the chest.

(v) Talk. Talk aloud and slowly. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be useful to satisfy this requirement.

> 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 his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(vi) Jog in place.

(vii) Breathe normally.

(k) At the beginning of each exercise, the aerosol concentration shall be replenished using one-half the number of squeezes as initially described in subdivision (i) of this subsection.

(l) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected.

(m) If the saccharin is detected the fit is deemed unsatisfactory and a different respirator shall be tried.

(n) Successful completion of the test protocol shall allow the use of the half mask tested respirator in contaminated atmospheres up to 10 times the PEL of MDA. In other words this protocol may not be used to assign protection factors higher than ten.

(o) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(p) If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

(q) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.

(r) Qualitative fit testing shall be repeated at least every 12 months.

(s) In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

(i) Weight change of 20 pounds or more;

(ii) Significant facial scarring in the area of the facepiece seal;

(iii) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures;

(iv) Reconstructive or cosmetic surgery; or

(v) Any other condition that may interfere with facepiece sealing.

(4) Recordkeeping. A summary of all test results shall be maintained by the employer for 3 years. The summary shall include:

(a) Name of test subject.

(b) Date of testing.

(c) Name of test conductor.

(d) Respirators selected (indicate manufacturer, model, size, and approval number).

(e) Testing agent.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07668, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07670 Appendix E-1-c—Irritant fume protocol.** (1) Respirator selection. Respirators shall be selected as described in WAC 296-62-07666(2), except that each respirator shall be equipped with a combination of high-efficiency and acid-gas cartridges.

(2) Fit test.

(a) The test subject shall be allowed to smell a weak concentration of the irritant smoke to familiarize the subject with the characteristic odor.

(b) The test subject shall properly don the respirator selected as above, and wear it for at least 10 minutes before starting the fit test.

(c) The test conductor shall review this protocol with the test subject before testing.

(d) The test subject shall perform the conventional positive-pressure and negative-pressure fit checks (see ANSI Z88.2 1980). Failure of either check shall be cause to select an alternate respirator.

(e) Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA part #5645, or equivalent. Attach a short length of tubing to one end of the smoke tube. Attach the other end of the smoke tube to a low pressure air pump set to deliver 200 milliliters per minute.

(f) Advise the test subject that the smoke can be irritating to the eyes and instruct the subject to keep the eyes closed while the test is performed.

(g) The test conductor shall direct the stream of irritant smoke from the tube towards the faceseal area of the test subject. The person conducting the test shall begin with the tube at least 12 inches from the facepiece and gradually move to within one inch, moving around the whole perimeter of the mask.

(h) The test subject shall be instructed to do the following exercises while the respirator is being challenged by the smoke. Each exercise shall be performed for one minute.

(i) Breathe normally.

(ii) Breathe deeply. Be certain breaths are deep and regular.

(iii) Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.

(iv) Nod head up and down. Be certain motions are complete and made every second. Inhale when head is in the full up position (looking toward ceiling). Do not bump the respirator against the chest.

(v) Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may also be used.

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 his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(vi) Jogging in place.

(vii) Breathe normally.

(i) The test subject shall indicate to the test conductor if the irritant smoke is detected. If smoke is detected, the test conductor shall stop the test. In this case, the tested respirator is rejected and another respirator shall be selected.

(j) Each test subject passing the smoke test (i.e., without detecting the smoke) shall be given a sensitivity check of smoke from the same tube to determine if the test subject reacts to the smoke. Failure to evoke a response shall void the fit test.

(k) Subdivisions (d), (i), and (j) of this subsection of this fit test protocol shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agents.

(l) Respirators successfully tested by the protocol may be used in contaminated atmospheres up to ten times the PEL of MDA.

(m) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(n) If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

(o) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.

(p) Qualitative fit testing shall be repeated at least every 12 months.

(q) In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

(i) Weight change of 20 pounds or more;

(ii) Significant facial scarring in the area of the facepiece seal;

(iii) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures;

(iv) Reconstructive or cosmetic surgery; or

(v) Any other condition that may interfere with facepiece sealing.

(3) Recordkeeping. A summary of all test results shall be maintained by the employer for 3 years. The summary shall include:

(a) Name of test subject.

(b) Date of testing.

(c) Name of test conductor.

(d) Respirators selected (indicate manufacturer, model, size, and approval number).

(e) Testing agent.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07670, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07672 Appendix E-2—Quantitative fit test procedures.** (1) General.

(a) The method applies to the negative-pressure nonpowered air-purifying respirators only.

(b) The employer shall assign an individual (with help as needed) who shall assume the full responsibility for implementing the respirator quantitative fit test program.

(2) Definition.

(a) "Quantitative fit test" means the measurement of the effectiveness of a respirator seal in excluding the ambient atmosphere. The test is performed by dividing the measured concentration of challenge agent in a test chamber by the measured concentration of the challenge agent inside the respirator facepiece when the normal air-purifying element has been replaced by an essentially perfect purifying element.

(b) "Challenge agent" means the air contaminant introduced into a test chamber so that its concentration inside and outside the respirator may be compared.

(c) "Test subject" means the person wearing the respirator for quantitative fit testing.

(d) "Normal standing position" means standing erect and straight with arms down along the sides and looking straight ahead.

(e) "Fit factor" means the ratio of challenge agent concentration outside with respect to the inside of a respirator inlet covering (facepiece or enclosure).

(3) Apparatus.

(a) Instrumentation. Corn oil, sodium chloride, or other appropriate aerosol generation, dilution, and measurement systems shall be used for quantitative fit test.

(b) Test chamber. The test chamber shall be large enough to permit all test subjects to freely perform all required exercises without distributing the challenge agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the challenge agent is effectively isolated from the ambient air yet uniform in concentration throughout the chamber.

(c) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high-efficiency particulate filter supplied by the same manufacturer.

(d) The sampling instrument shall be selected so that a strip chart record may be made of the test showing the rise and fall of challenge agent concentration with each inspiration and expiration at fit factors of at least 2,000.

(e) The combination of substitute air-purifying elements (if any), challenge agent, and challenge agent concentration in the test chamber shall be such that the test subject is not exposed in excess of PEL to the challenge agent at any time during the testing process.

(f) The sampling port on the test specimen respirator shall be placed and constructed so that there is no detectable leak around the port, a free air flow is allowed into the sampling line at all times, and so there is no interference with the fit or performance of the respirator.

(g) The test chamber and test set-up shall permit the person administering the test to observe one test subject inside the chamber during the test.

(h) The equipment generating the challenge atmosphere shall maintain the concentration of challenge agent constant within a 10 percent variation for the duration of the test.

(i) The time lag (interval between an event and its being recorded on the strip chart) of the instrumentation may not exceed 2 seconds.

(j) The tubing for the test chamber atmosphere and for the respirator sampling port shall be the same diameter, length, and material. It shall be kept as short as possible. The smallest diameter tubing recommended by the manufacturer shall be used.

(k) The exhaust flow from the test chamber shall pass through a high-efficiency filter before release to the room.

(l) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(4) Procedural requirements.

(a) The fitting of half-mask respirators should be started with those having multiple sizes and a variety of interchangeable cartridges and canisters such as the MSA Comfr

II-M, Norton M, Survivair M A-O M, or Scott-M. Use either of the tests outlined below to assure that the facepiece is properly adjusted.

(i) Positive-pressure test. With the exhaust port(s) blocked the negative pressure of slight inhalation should remain constant for several seconds.

(ii) Negative-pressure test. With the intake port(s) blocked the negative pressure slight inhalation should remain constant for several seconds.

(b) After a facepiece is adjusted, the test subject shall wear the facepiece for at least 5 minutes before conducting a qualitative test by using either of the methods described below and using the exercise regime described in subsection (5), subdivisions (a) through (e).

(i) Isoamyl acetate test. When using organic vapor cartridges, the test subject who can smell the odor should be unable to detect the odor of isoamyl acetate squirted into the air near the most vulnerable portions of the facepiece seal. In a location which is separated from the test area, the test subject shall be instructed to close her/his eyes during the test period. A combination cartridge or canister with organic vapor and high-efficiency filters shall be used when available for the particular mask being tested. The test subject shall be given an opportunity to smell the odor of isoamyl acetate before the test is conducted.

(ii) Irritant fume test. When using high-efficiency filters, the test subject should be unable to detect the odor of irritant fume (stannic chloride or titanium tetrachloride ventilation smoke tubes) squirted into the air near the most vulnerable portions of the facepiece seal. The test subject shall be instructed to close her/his eyes during the test period.

(c) The test subject may enter the quantitative testing chamber only if she or he has obtained a satisfactory fit as stated in subdivision (b) of this subsection.

(d) Before the subject enters the test chamber, a reasonably stable challenge agent concentration shall be measured in the test chamber.

(e) Immediately after the subject enters the test chamber, the challenge agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half-mask and 1 percent for a full facepiece.

(f) A stable challenge agent concentration shall be obtained prior to the actual start of testing.

(g) Respirator restraining straps may not be overtightened for testing. The straps shall be adjusted by the wearer to give a reasonably comfortable fit typical of normal use.

(5) Exercise regime. Prior to entering the test chamber, the test subject shall be given complete instructions as to her/his part in the test procedures. The test subject shall perform the following exercises, in the order given, for each independent test.

(a) Normal breathing (NB). In the normal standing position, without talking, the subject shall breathe normally for at least one minute.

(b) Deep breathing (DB). In the normal standing position the subject shall do deep breathing for at least one minute pausing so as not to hyperventilate.

(c) Turning head side to side (SS). Standing in place the subject shall slowly turn his head from side between the extreme positions to each side. The head shall be held at each extreme position for at least 5 seconds. Perform for at least five complete cycles.

(d) Moving head up and down (UD). Standing in place, the subject shall slowly move his head up and down between the extreme position straight up and the extreme position straight down. The head shall be held at each extreme position for at least 5 seconds. Perform for at least five complete cycles.

(e) Reading (R). The subject shall read out slowly and loud so as to be heard clearly by the test conductor or monitor. The test subject shall read the "Rainbow Passage."

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 (G). The test subject shall grimace, smile, frown, and generally contort the face using the facial muscles. Continue for at least 15 seconds.

(g) Bend over and touch toes (B). The test subject shall bend at the waist and touch toes and return to upright position. Repeat for at least one minute.

(h) Jogging in place (J). The test subject shall jog in place for at least one minute.

(i) Normal breathing (NB). In the normal standing position, without talking, the subject shall breathe normally for at least one minute.

(6) Termination of tests. The test shall be terminated whenever any single peak penetration exceeds 5 percent for half-masks and 1 percent for full facepieces. The test subject may be refitted and retested. If two of the three required tests are terminated, the fit shall be deemed inadequate.

(7) Calculation of fit factors.

(a) The fit factor determined by the quantitative fit test equals the average concentration inside the respirator.

(b) The average test chamber concentration is the arithmetic average of the test chamber concentration at the beginning and of the end of the test.

(c) The average peak concentration of the challenge agent inside the respirator shall be the arithmetic average peak concentrations for each of the nine exercises of the test which are computed as the arithmetic average of the peak concentrations found for each breath during the exercise.

(d) The average peak concentration for an exercise may be determined graphically if there is not a great variation in the peak concentrations during a single exercise.

(8) Interpretation of test results. The fit factor measured by the quantitative fit testing shall be the lowest of the three protection factors resulting from three independent tests.

(9) Other requirements.

(a) The test subject shall not be permitted to wear a half-mask or full facepiece if the minimum fit factor of 250 or 1,250, respectively, cannot be obtained. If hair growth or apparel interfere with a satisfactory fit, then they shall be

altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

(b) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(c) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician to determine whether the test subject can wear a respirator while performing her or his duties.

(d) The test subject shall be given the opportunity to wear the assigned respirator for one week. If the respirator does not provide a satisfactory fit during actual use, the test subject may request another QNFT which shall be performed immediately.

(e) A respirator fit factor card shall be issued to the subject with the following information:

(i) Name.

(ii) Date of fit test.

(iii) Protection factors obtained through each manufacturer, model and approval number of respirator tested.

(iv) Name and signature of the person that conducted the test.

(f) Filters used for qualitative or quantitative fit testing shall be replaced weekly, whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media. Organic vapor cartridges/canisters shall be replaced daily or sooner if there is any indication of breakthrough by the test agent.

(10) Retesting. In addition, because the sealing of the respirator may be affected, quantitative fit testing shall be repeated immediately when the test subject has a:

(a) Weight change of 20 pounds or more;

(b) Significant facial scarring in the area of the facepiece seal;

(c) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures;

(d) Reconstructive or cosmetic surgery; or

(e) Any other condition that may interfere with facepiece sealing.

(11) Recordkeeping.

(a) A summary of all test results shall be maintained for three years. The summary shall include:

(i) Name of test subject.

(ii) Date of testing.

(iii) Name of the test conductor.

(iv) Fit factors obtained from every respirator tested (indicate manufacturer, model, size, and approval number).

(b) A copy of all test data including the strip chart and results shall be kept for at least five years.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07672, filed 2/3/93, effective 3/15/93.]

**WAC 296-62-07711 Regulated areas.** (1) General. The employer shall establish a regulated area in work areas where airborne concentrations of asbestos exceed or can reasonably be expected to exceed the permissible exposure limits prescribed in WAC 296-62-07705.

(2) Demarcation. The regulated area shall be demarcated in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne concentrations of asbestos in excess of the permissible exposure limits.

(3) Access. Access to regulated areas shall be limited to authorized persons or to persons authorized by the Washington Industrial Safety and Health Act or regulations issued pursuant thereto.

(4) Provision of respirators. Each person entering a regulated area shall be supplied with and required to use a respirator, selected in accordance with WAC 296-62-07715.

(5) Protective clothing. All persons entering a regulated area shall be supplied with and required to wear protective clothing, selected in accordance with WAC 296-62-07717.

(6) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated areas.

(7) Confined space. The employer shall determine if a confined space hazard exists and shall take any necessary precautions in accordance with chapter 296-62 WAC Part M.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-62-07711, filed 9/22/93, effective 11/1/93; 89-11-035 (Order 89-03), § 296-62-07711, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07711, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07711, filed 4/27/87.]

**WAC 296-62-3090 Handling drums and containers.** (1) General.

(a) Hazardous substances and contaminated soils, liquids, and other residues shall be handled, transported, labeled, and disposed of in accordance with this section.

(b) Drums and containers used during the clean-up shall meet the appropriate DOT, OSHA, WISHA, and EPA regulations for the wastes that they contain.

(c) When practical, drums and containers shall be inspected and their integrity shall 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.) shall be moved to an accessible location and inspected prior to further handling.

(d) Unlabeled drums and containers shall be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled.

(e) Site operations shall be organized to minimize the amount of drum or container movement.

(f) Prior to movement of drums or containers, all employees exposed to the transfer operation shall be warned of the potential hazards associated with the contents of the drums or containers.

(g) United States Department of Transportation specified salvage drums or containers and suitable quantities of proper absorbent shall be kept available and used in areas where spills, leaks, or ruptures may occur.

(h) 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, shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred.

(i) Drums and containers that cannot be moved without rupture, leakage, or spillage shall be emptied into a sound container using a device classified for the material being transferred.

(j) A ground-penetrating system or other type of detection system or device shall be used to estimate the location and depth of buried drums or containers.

(k) Soil or covering material shall be removed with caution to prevent drum or container rupture.

(l) Fire extinguishing equipment meeting the requirements of Part G of chapter 296-24 WAC shall be on hand and ready for use to control incipient fires.

(2) Opening drums and containers. The following procedures shall be followed in areas where drums or containers are being opened:

(a) Where an airline respirator system is used, connections to the source of air supply shall be protected from contamination and the entire system shall be protected from physical damage.

(b) Employees not actually involved in opening drums or containers shall be kept a safe distance from the drums or containers being opened.

(c) If employees must work near or adjacent to drums or containers being opened, a suitable shield that does not interfere with the work operation shall be placed between the employee and the drums or containers being opened to protect the employee in case of accidental explosion.

(d) Controls for drum or container opening equipment, monitoring equipment, and fire suppression equipment shall be located behind the explosion-resistant barrier.

(e) When there is a reasonable possibility of flammable atmospheres being present, material handling equipment and hand tools shall be of the type to prevent sources of ignition.

(f) Drums and containers shall 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 shall be placed between the employee and the drums or containers to reduce the risk of employee injury.

(g) Employees shall not stand upon or work from drums or containers.

(3) Material handling equipment. Material handling equipment used to transfer drums and containers shall be selected, positioned, and operated to minimize sources of ignition related to the equipment from igniting vapors released from ruptured drums or containers.

(4) Radioactive wastes. Drums and containers containing radioactive wastes shall not be handled until such time as their hazard to employees is properly assessed.

(5) Shock-sensitive wastes.

As a minimum, the following special precautions shall be taken when drums and containers containing or suspected of containing shock-sensitive wastes are handled:

(a) All nonessential employees shall be evacuated from the area of transfer.

(b) Material handling equipment shall be provided with explosive containment devices or protective shields to protect equipment operators from exploding containers.

(c) An employee alarm system capable of being perceived above surrounding light and noise conditions shall be used to signal the commencement and completion of explosive waste handling activities.

(d) Continuous communications (i.e., portable radios, hand signals, telephones, as appropriate) shall 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 shall not be used.

(e) Drums and containers under pressure, as evidenced by bulging or swelling, shall 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.

(f) Drums and containers containing packaged laboratory wastes shall 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.

(6) Laboratory waste packs. In addition to the requirements of subsection (4) of this section, the following precautions shall be taken, as a minimum, in handling laboratory waste packs (lab packs):

(a) Lab packs shall 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.

(b) If crystalline material is noted on any container, the contents shall be handled as a shock-sensitive waste until the contents are identified.

(7) Sampling of drum and container contents. Sampling of containers and drums shall 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.

(8) Shipping and transport.

(a) Drums and containers shall be identified and classified prior to packaging for shipment.

(b) Drum or container staging areas shall be kept to the minimum number necessary to identify and classify materials safely and prepare them for transport.

(c) Staging areas shall be provided with adequate access and egress routes.

(d) Bulking of hazardous wastes shall be permitted only after a thorough characterization of the materials has been completed.

(9) Tank and vault procedures.

(a) Tanks and vaults containing hazardous substances shall be handled in a manner similar to that for drums and containers, taking into consideration the size of the tank or vault.

(b) Appropriate tank or vault entry procedures as described in chapter 296-62 WAC Part M and the employer's safety and health plan shall be followed whenever employees must enter a tank or vault.

[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.]

# Chapter 296-67 WAC
# SAFETY STANDARDS FOR PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS

WAC



**WAC 296-67-005 Definitions.** "Atmospheric tank" means a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g. (pounds per square inch gauge, 3.45 Kpa).

"Boiling point" means the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760 mm.). For the purposes of this part, where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, the 10 percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D-86-62, may be used as the boiling point of the liquid.

"Catastrophic release" means a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemicals, that presents serious danger to employees in the workplace.

"Facility" means the buildings, containers, or equipment which contain a process.

"Highly hazardous chemical" means a substance possessing toxic, reactive, flammable, or explosive properties and specified by WAC 296-67-001 (2)(a).

"Hot work" means work involving electric or gas welding, cutting, brazing, or similar flame or spark-producing operations.

"Normally unoccupied remote facility" means a facility which is operated, maintained, or serviced by employees who visit the facility only periodically to check its operation and to perform necessary operating or maintenance tasks. No employees are permanently stationed at the facility. Facilities meeting this definition are not contiguous with, and must be geographically remote from all other buildings, processes, or persons.

"Process" means any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any group of vessels which are interconnected and separate vessels which are located such that a highly hazardous chemical could be involved in a potential release shall be considered a single process.

"Replacement in kind" means a replacement which satisfies the design specification.

"Trade secret" means any confidential formula, pattern, process, device, information, or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Chapter 296-62 WAC, Part C, sets out the criteria to be used in evaluating trade secrets.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-67-005, filed 10/20/93, effective 12/1/93; 92-17-022 (Order 92-06), § 296-67-005, filed 8/10/92, effective 9/10/92.]

**WAC 296-67-285 Appendix A—List of highly hazardous chemicals, toxics and reactives (mandatory).** This appendix contains a listing of toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity.

| CHEMICAL NAME | CAS* | TQ** |
|---|---|---|
| Acetaldehyde | 75-07-0 | 2500 |
| Acrolein (2-Propenal) | 107-02-8 | 150 |
| Acrylyl Chloride | 814-68-6 | 250 |
| Allyl Chloride | 107-05-1 | 1000 |
| Allylamine | 107-11-9 | 1000 |
| Alkylaluminums | Varies | 5000 |
| Ammonia, Anhydrous | 7664-41-7 | 10000 |
| Ammonia solutions (>44% ammonia by weight) | 7664-41-7 | 15000 |
| Ammonium Perchlorate | 7790-98-9 | 7500 |
| Ammonium Permanganate | 7787-36-2 | 7500 |
| Arsine (also called Arsenic Hydride) | 7784-42-1 | 100 |
| Bis(Chloromethyl) Ether | 542-88-1 | 100 |
| Boron Trichloride | 10294-34-5 | 2500 |
| Boron Trifluoride | 7637-07-2 | 250 |
| Bromine | 7726-95-6 | 1500 |
| Bromine Chloride | 13863-41-7 | 1500 |
| Bromine Pentafluoride | 7789-30-2 | 2500 |
| Bromine Trifluoride | 7787-71-5 | 15000 |
| 3-Bromopropyne (also called Propargyl Bromide) | 106-96-7 | 100 |
| Butyl Hydroperoxide (Tertiary) | 75-91-2 | 5000 |
| Butyl Perbenzoate (Tertiary) | 614-45-9 | 7500 |
| Carbonyl Chloride (see Phosgene) | 75-44-5 | 100 |
| Carbonyl Fluoride | 353-50-4 | 2500 |
| Cellulose Nitrate (concentration >12.6% nitrogen) | 9004-70-0 | 2500 |
| Chlorine | 7782-50-5 | 1500 |
| Chlorine Dioxide | 10049-04-4 | 1000 |
| Chlorine Pentafluoride | 13637-63-3 | 1000 |
| Chlorine Trifluoride | 7790-91-2 | 1000 |
| Chlorodiethylaluminum (also called Diethylaluminum Chloride) | 96-10-6 | 5000 |
| 1-Chloro-2,4-Dinitrobenzene | 97-00-7 | 5000 |
| Chloromethyl Methyl Ether | 107-30-2 | 500 |
| Chloropicrin | 76-06-2 | 500 |
| Chloropicrin and Methyl Bromide mixture | None | 1500 |
| Chloropicrin and Methyl Chloride mixture | None | 1500 |
| Cumene Hydroperoxide | 80-15-9 | 5000 |
| Cyanogen | 460-19-5 | 2500 |
| Cyanogen Chloride | 506-77-4 | 500 |
| Cyanuric Fluoride | 675-14-9 | 100 |
| Diacetyl Peroxide (Concentration >70%) | 110-22-5 | 5000 |
| Diazomethane | 334-88-3 | 500 |
| Dibenzoyl Peroxide | 94-36-0 | 7500 |
| Diborane | 19287-45-7 | 100 |
| Dibutyl Peroxide (Tertiary) | 110-05-4 | 5000 |
| Dichloro Acetylene | 7572-29-4 | 250 |
| Dichlorosilane | 4109-96-0 | 2500 |
| Diethylzinc | 557-20-0 | 10000 |
| Diisopropyl Peroxydicarbonate | 105-64-6 | 7500 |
| Dilaluroyl Peroxide | 105-74-8 | 7500 |
| Dimethyldichlorosilane | 75-78-5 | 1000 |
| Dimethylhydrazine, 1,1- | 57-14-7 | 1000 |
| Dimethylamine, Anhydrous | 124-40-3 | 2500 |
| 2,4-Dinitroaniline | 97-02-9 | 5000 |
| Ethyl Methyl Ketone Peroxide (also Methyl Ethyl Ketone Peroxide; concentration >60%) | 1338-23-4 | 5000 |
| Ethyl Nitrite | 109-95-5 | 5000 |

| | | |
|---|---|---|
| Ethylamine | 75-04-7 | 7500 |
| Ethylene Fluorohydrin | 371-62-0 | 100 |
| Ethylene Oxide | 75-21-8 | 5000 |
| Ethyleneimine | 151-56-4 | 1000 |
| Fluorine | 7782-41-4 | 1000 |
| Formaldehyde (Formalin) | 50-00-0 | 1000 |
| Furan | 110-00-9 | 500 |
| Hexafluoroacetone | 684-16-2 | 5000 |
| Hydrochloric Acid, Anhydrous | 7647-01-0 | 5000 |
| Hydrofluoric Acid, Anhydrous | 7664-39-3 | 1000 |
| Hydrogen Bromide | 10035-10-6 | 5000 |
| Hydrogen Chloride | 7647-01-0 | 5000 |
| Hydrogen Cyanide, Anhydrous | 74-90-8 | 1000 |
| Hydrogen Fluoride | 7664-39-3 | 1000 |
| Hydrogen Peroxide (52% by weight or greater) | 7722-84-1 | 7500 |
| Hydrogen Selenide | 7783-07-5 | 150 |
| Hydrogen Sulfide | 7783-06-4 | 1500 |
| Hydroxylamine | 7803-49-8 | 2500 |
| Iron, Pentacarbonyl | 13463-40-6 | 250 |
| Isopropylamine | 75-31-0 | 5000 |
| Ketene | 463-51-4 | 100 |
| Methacrylaldehyde | 78-85-3 | 1000 |
| Methacryloyl Chloride | 920-46-7 | 150 |
| Methacryloyloxyethyl Isocyanate | 30674-80-7 | 100 |
| Methyl Acrylonitrile | 126-98-7 | 250 |
| Methylamine, Anhydrous | 74-89-5 | 1000 |
| Methyl Bromide | 74-83-9 | 2500 |
| Methyl Chloride | 74-87-3 | 15000 |
| Methyl Chloroformate | 79-22-1 | 500 |
| Methyl Ethyl Ketone Peroxide (concentration >60%) | 1338-23-4 | 5000 |
| Methyl Fluoroacetate | 453-18-9 | 100 |
| Methyl Fluorosulfate | 421-20-5 | 100 |
| Methyl Hydrazine | 60-34-4 | 100 |
| Methyl Iodide | 74-88-4 | 7500 |
| Methyl Isocyanate | 624-83-9 | 250 |
| Methyl Mercaptan | 74-93-1 | 5000 |
| Methyl Vinyl Ketone | 79-84-4 | 100 |
| Methyltrichlorosilane | 75-79-6 | 500 |
| Nickel Carbonyl (Nickel Tetracarbonyl) | 13463-39-3 | 150 |
| Nitric Acid (94.5% by weight or greater) | 7697-37-2 | 500 |
| Nitric Oxide | 10102-43-9 | 250 |
| Nitroaniline (para Nitroaniline) | 100-01-6 | 5000 |
| Nitromethane | 75-52-5 | 2500 |
| Nitrogen Dioxide | 10102-44-0 | 250 |
| Nitrogen Oxides (NO; NO2; N204; N203) | 10102-44-0 | 250 |
| Nitrogen Tetroxide (also called Nitrogen Peroxide) | 10544-72-6 | 250 |
| Nitrogen Trifluoride | 7783-54-2 | 5000 |
| Nitrogen Trioxide | 10544-73-7 | 250 |
| Oleum (65% to 80% by weight; also called Fuming Sulfuric Acid) | 8014-94-7 | 1000 |
| Osmium Tetroxide | 20816-12-0 | 100 |
| Oxygen Difluoride (Fluorine Monoxide) | 7783-41-7 | 100 |
| Ozone | 10028-15-6 | 100 |
| Pentaborane | 19624-22-7 | 100 |
| Peracetic Acid (concentration >60% Acetic Acid; also called Peroxyacetic Acid) | 79-21-0 | 1000 |
| Perchloric Acid (concentration >60% by weight) | 7601-90-3 | 5000 |
| Perchloromethyl Mercaptan | 594-42-3 | 150 |
| Perchloryl Fluoride | 7616-94-6 | 5000 |
| Peroxyacetic Acid (concentration >60% Acetic Acid; also called Peracetic Acid) | 79-21-0 | 1000 |
| Phosgene (also called Carbonyl Chloride) | 75-44-5 | 100 |
| Phosphine (Hydrogen Phosphide) | 7803-51-2 | 100 |
| Phosphorus Oxychloride (also called Phosphoryl Chloride) | 10025-87-3 | 1000 |
| Phosphorus Trichloride | 7719-12-2 | 1000 |
| Phosphoryl Chloride (also called Phosphorus Oxychloride) | 10025-87-3 | 1000 |
| Propargyl Bromide | 106-96-7 | 100 |
| Propyl Nitrate | 627-3-4 | 2500 |
| Sarin | 107-44-8 | 100 |
| Selenium Hexafluoride | 7783-79-1 | 1000 |
| Stibine (Antimony Hydride) | 7803-52-3 | 500 |
| Sulfur Dioxide (liquid) | 7446-09-5 | 1000 |
| Sulfur Pentafluoride | 5714-22-7 | 250 |
| Sulfur Tetrafluoride | 7783-60-0 | 250 |
| Sulfur Trioxide (also called Sulfuric Anhydride) | 7446-11-9 | 1000 |
| Sulfuric Anhydride (also called Sulfur Trioxide) | 7446-11-9 | 1000 |
| Tellurium Hexafluoride | 7783-80-4 | 250 |
| Tetrafluoroethylene | 116-14-3 | 5000 |
| Tetrafluorohydrazine | 10036-47-2 | 5000 |
| Tetramethyl Lead | 75-74-1 | 1000 |
| Thionyl Chloride | 7719-09-7 | 250 |
| Trichloro (chloromethyl) Silane | 1558-25-4 | 100 |
| Trichloro (dichlorophenyl) Silane | 27137-85-5 | 2500 |
| Trichlorosilane | 10025-78-2 | 5000 |
| Trifluorochloroethylene | 79-38-9 | 10000 |
| Trimethyoxysilane | 2487-90-3 | 1500 |

* Chemical Abstract Service Number.

** Threshold Quantity in Pounds (Amount necessary to be covered by this standard).

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-67-285, filed 10/20/93, effective 12/1/93; 92-17-022 (Order 92-06), § 296-67-285, filed 8/10/92, effective 9/10/92.]

**WAC 296-67-291 Appendix C—Compliance guidelines and recommendations for process safety management (nonmandatory).** This appendix serves as a nonmandatory guideline to assist employers and employees in complying with the requirements of this section, as well as provides other helpful recommendations and information. Examples presented in this appendix are not the only means of achieving the performance goals in the standard. This appendix neither adds nor detracts from the requirements of the standard.

(1) Introduction to process safety management. The major objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations which could expose employees and others to serious hazards. An effective process safety management program requires a systematic approach to evaluating the whole process. Using this approach the process design, process technology, operational and maintenance activities and procedures, nonroutine activities and procedures, emergency preparedness plans and procedures, training programs, and other elements which impact the process are all considered in the evaluation. The various lines of defense that have been incorporated into the design and operation of the process to prevent or mitigate the release of hazardous chemicals need to be evaluated and strengthened to assure their effectiveness at each level. Process safety management is the proactive identification, evaluation and mitigation or prevention of chemical releases that could occur as a result of failures in process, procedures, or equipment. The process safety management standard targets highly hazardous chemicals that have the potential to cause a catastrophic incident. This standard as a whole is to aid employers in their efforts to prevent or mitigate episodic chemical releases that could lead to a catastrophe in the workplace and possibly to the surrounding community. To control these types of hazards, employers need to develop the necessary expertise, experiences, judgment, and proactive initiative within their workforce to properly implement and maintain an effective process safety management program as envisioned in the WISHA standard. This WISHA standard

is required by the Clean Air Act amendments as is the Environmental Protection Agency's Risk Management Plan. Employers, who merge the two sets of requirements into their process safety management program, will better assure full compliance with each as well as enhancing their relationship with the local community. While WISHA believes process safety management will have a positive effect on the safety of employees in workplaces and also offers other potential benefits to employers (increased productivity), smaller businesses which may have limited resources available to them at this time, might consider alternative avenues of decreasing the risks associated with highly hazardous chemicals at their workplaces. One method which might be considered is the reduction in the inventory of the highly hazardous chemical. This reduction in inventory will result in a reduction of the risk or potential for a catastrophic incident. Also, employers including small employers may be able to establish more efficient inventory control by reducing the quantities of highly hazardous chemicals on site below the established threshold quantities. This reduction can be accomplished by ordering smaller shipments and maintaining the minimum inventory necessary for efficient and safe operation. When reduced inventory is not feasible, then the employer might consider dispersing inventory to several locations on site. Dispersing storage into locations where a release in one location will not cause a release in another location is a practical method to also reduce the risk or potential for catastrophic incidents.

(2) Employee involvement in process safety management. Section 304 of the Clean Air Act amendments states that employers are to consult with their employees and their representatives regarding the employers efforts in the development and implementation of the process safety management program elements and hazard assessments. Section 304 also requires employers to train and educate their employees and to inform affected employees of the findings from incident investigations required by the process safety management program. Many employers, under their safety and health programs, have already established means and methods to keep employees and their representatives informed about relevant safety and health issues and employers may be able to adapt these practices and procedures to meet their obligations under this standard. Employers who have not implemented an occupational safety and health program may wish to form a safety and health committee of employees and management representatives to help the employer meet the obligations specified by this standard. These committees can become a significant ally in helping the employer to implement and maintain an effective process safety management program for all employees.

(3) Process safety information. Complete and accurate written information concerning process chemicals, process technology, and process equipment is essential to an effective process safety management program and to a process hazards analysis. The compiled information will be a necessary resource to a variety of users including the team that will perform the process hazards analysis as required under WAC 296-67-017; those developing the training programs and the operating procedures; contractors whose employees will be working with the process; those conducting the prestartup reviews; local emergency preparedness planners; and incurrence and enforcement officials. The information to be compiled about the chemicals, including process intermediates, needs to be comprehensive enough for an accurate assessment of the fire and explosion characteristics, reactivity hazards, the safety and health hazards to workers, and the corrosion and erosion effects on the process equipment and monitoring tools. Current material safety data sheet (MSDS) information can be used to help meet this requirement which must be supplemented with process chemistry information including runaway reaction and over pressure hazards if applicable. Process technology information will be a part of the process safety information package and it is expected that it will include diagrams of the type shown in WAC 296-67-289, Appendix B of this part as well as employer established criteria for maximum inventory levels for process chemicals; limits beyond which would be considered upset conditions; and a qualitative estimate of the consequences or results of deviation that could occur if operating beyond the established process limits. Employers are encouraged to use diagrams which will help users understand the process. A block flow diagram is used to show the major process equipment and interconnecting process flow lines and show flow rates, stream composition, temperatures, and pressures when necessary for clarity. The block flow diagram is a simplified diagram. Process flow diagrams are more complex and will show all main flow streams including valves to enhance the understanding of the process, as well as pressures and temperatures on all feed and product lines within all major vessels, in and out of headers and heat exchangers, and points of pressure and temperature control. Also, materials of construction information, pump capacities and pressure heads, compressor horsepower and vessel design pressures and temperatures are shown when necessary for clarity. In addition, major components of control loops are usually shown along with key utilities on process flow diagrams. Piping and instrument diagrams (P&IDs) may be the more appropriate type of diagrams to show some of the above details and to display the information for the piping designer and engineering staff. The P&Ids are to be used to describe the relationships between equipment and instrumentation as well as other relevant information that will enhance clarity. Computer software programs which do P&Ids or other diagrams useful to the information package, may be used to help meet this requirement. The information pertaining to process equipment design must be documented. In other words, what were the codes and standards relied on to establish good engineering practice. These codes and standards are published by such organizations as the American Society of Mechanical Engineers, American Petroleum Institute, American National Standards Institute, National Fire Protection Association, American Society for Testing and Materials, National Board of Boiler and Pressure Vessel Inspectors, National Association of Corrosion Engineers, American Society of Exchange Manufacturers Association, and model building code groups. In addition, various engineering societies issue technical reports which impact process design. For example, the American Institute of Chemical Engineers has published technical reports on topics such as two phase flow for venting devices. This type of technically recognized report would constitute good engineering practice. For existing equipment designed and constructed many years ago in accordance with the codes and standards available at that

time and no longer in general use today, the employer must document which codes and standards were used and that the design and construction along with the testing, inspection and operation are still suitable for the intended use. Where the process technology requires a design which departs from the applicable codes and standards, the employer must document that the design and construction is suitable for the intended purpose.

(4) Process hazard analysis. A process hazard analysis (PHA), sometimes called a process hazard evaluation, is one of the most important elements of the process safety management program. A PHA is an organized and systematic effort to identify and analyze the significance of potential hazards associated with the processing or handling of highly hazardous chemicals. A PHA provides information which will assist employers and employees in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals. A PHA is directed toward analyzing potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals and major spills of hazardous chemicals. The PHA focuses on equipment, instrumentation, utilities, human actions (routine and nonroutine), and external factors that might impact the process. These considerations assist in determining the hazards and potential failure points or failure modes in a process. The selection of a PHA methodology or technique will be influenced by many factors including the amount of existing knowledge about the process. Is it a process that has been operated for a long period of time with little or no innovation and extensive experience has been generated with its use? Or, is it a new process or one which has been changed frequently by the inclusion of innovative features? Also, the size and complexity of the process will influence the decision as to the appropriate PHA methodology to use. All PHA methodologies are subject to certain limitations. For example, the checklist methodology works well when the process is very stable and no changes are made, but it is not as effective when the process has undergone extensive change. The checklist may miss the most recent changes and consequently the changes would not be evaluated. Another limitation to be considered concerns the assumptions made by the team or analyst. The PHA is dependent on good judgment and the assumptions made during the study need to be documented and understood by the team and reviewer and kept for a future PHA. The team conducting the PHA need to understand the methodology that is going to be used. A PHA team can vary in size from two people to a number of people with varied operational and technical backgrounds. Some team members may only be a part of the team for a limited time. The team leader needs to be fully knowledgeable in the proper implementation of the PHA methodology that is to be used and should be impartial in the evaluation. The other full or part time team members need to provide the team with expertise in areas such as process technology, process design, operating procedures and practices, including how the work is actually performed, alarms, emergency procedures, instrumentation, maintenance procedures, both routine and nonroutine tasks, including how the tasks are authorized, procurement of parts and supplies, safety and health, and any other relevant subject as the need dictates. At least one team member must be familiar with the process. The ideal team will have an intimate knowledge of the standards, codes, specifications and regulations applicable to the process being studied. The selected team members need to be compatible and the team leader needs to be able to manage the team, and the PHA study. The team needs to be able to work together while benefiting from the expertise of others on the team or outside the team, to resolve issues, and to forge a consensus on the findings of the study and recommendations. The application of a PHA to a process may involve the use of different methodologies for various parts of the process. For example, a process involving a series of unit operations of varying sizes, complexities, and ages may use different methodologies and team members for each operation. Then the conclusions can be integrated into one final study and evaluation. A more specific example is the use of a checklist PHA for a standard boiler or heat exchanger and the use of a hazard and operability PHA for the overall process. Also, for batch type processes like custom batch operations, a generic PHA of a representative batch may be used where there are only small changes of monomer or other ingredient ratios and the chemistry is documented for the full range and ratio of batch ingredients. Another process that might consider using a generic type of PHA is a gas plant. Often these plants are simply moved from site to site and therefore, a generic PHA may be used for these movable plants. Also, when an employer has several similar size gas plants and no sour gas is being processed at the site, then a generic PHA is feasible as long as the variations of the individual sites are accounted for in the PHA. Finally, when an employer has a large continuous process which has several control rooms for different portions of the process such as for a distillation tower and a blending operation, the employer may wish to do each segment separately and then integrate the final results. Additionally, small businesses which are covered by this rule, will often have processes that have less storage volume, less capacity, and less complicated than processes at a large facility. Therefore, WISHA would anticipate that the less complex methodologies would be used to meet the process hazard analysis criteria in the standard. These process hazard analyses can be done in less time and with a few people being involved. A less complex process generally means that less data, P&Ids, and process information is needed to perform a process hazard analysis. Many small businesses have processes that are not unique, such as cold storage lockers or water treatment facilities. Where employer associations have a number of members with such facilities, a generic PHA, evolved from a checklist or what-if questions, could be developed and used by each employer effectively to reflect his/her particular process; this would simplify compliance for them. When the employer has a number of processes which require a PHA, the employer must set up a priority system of which PHAs to conduct first. A preliminary or gross hazard analysis may be useful in prioritizing the processes that the employer has determined are subject to coverage by the process safety management standard. Consideration should first be given to those processes with the potential of adversely affecting the largest number of employees. This prioritizing should consider the potential severity of a chemical release, the number of potentially affected employees, the operating history of the

process such as the frequency of chemical releases, the age of the process and any other relevant factors. These factors would suggest a ranking order and would suggest either using a weighing factor system or a systematic ranking method. The use of a preliminary hazard analysis would assist an employer in determining which process should be of the highest priority and thereby the employer would obtain the greatest improvement in safety at the facility. Detailed guidance on the content and application of process hazard analysis methodologies is available from the American Institute of Chemical Engineers' Center for Chemical Process Safety (see WAC 296-67-293, Appendix D).

(5) Operating procedures and practices. Operating procedures describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected, and safety and health precautions to be taken. The procedures need to be technically accurate, understandable to employees, and revised periodically to ensure that they reflect current operations. The process safety information package is to be used as a resource to better assure that the operating procedures and practices are consistent with the known hazards of the chemicals in the process and that the operating parameters are accurate. Operating procedures should be reviewed by engineering staff and operating personnel to ensure that they are accurate and provide practical instructions on how to actually carry out job duties safely. Operating procedures will include specific instructions or details on what steps are to be taken or followed in carrying out the stated procedures. These operating instructions for each procedure should include the applicable safety precautions and should contain appropriate information on safety implications. For example, the operating procedures addressing operating parameters will contain operating instructions about pressure limits, temperature ranges, flow rates, what to do when an upset condition occurs, what alarms and instruments are pertinent if an upset condition occurs, and other subjects. Another example of using operating instructions to properly implement operating procedures is in starting up or shutting down the process. In these cases, different parameters will be required from those of normal operation. These operating instructions need to clearly indicate the distinctions between startup and normal operations such as the appropriate allowances for heating up a unit to reach the normal operating parameters. Also the operating instructions need to describe the proper method for increasing the temperature of the unit until the normal operating temperature parameters are achieved. Computerized process control systems add complexity to operating instructions. These operating instructions need to describe the logic of the software as well as the relationship between the equipment and the control system; otherwise, it may not be apparent to the operator. Operating procedures and instructions are important for training operating personnel. The operating procedures are often viewed as the standard operating practices (SOPs) for operations. Control room personnel and operating staff, in general, need to have a full understanding of operating procedures. If workers are not fluent in English then procedures and instructions need to be prepared in a second language understood by the workers. In addition, operating procedures need to be changed when there is a change in the process as a result of the management of change procedures. The consequences of operating procedure changes need to be fully evaluated and the information conveyed to the personnel. For example, mechanical changes to the process made by the maintenance department (like changing a valve from steel to brass or other subtle changes) need to be evaluated to determine if operating procedures and practices also need to be changed. All management of change actions must be coordinated and integrated with current operating procedures and operating personnel must be oriented to the changes in procedures before the change is made. When the process is shut down in order to make a change, then the operating procedures must be updated before startup of the process. Training in how to handle upset conditions must be accomplished as well as what operating personnel are to do in emergencies such as when a pump seal fails or a pipeline ruptures. Communication between operating personnel and workers performing work within the process area, such as nonroutine tasks, also must be maintained. The hazards of the tasks are to be conveyed to operating personnel in accordance with established procedures and to those performing the actual tasks. When the work is completed, operating personnel should be informed to provide closure on the job.

(6) Employee training. All employees, including maintenance and contractor employees, involved with highly hazardous chemicals need to fully understand the safety and health hazards of the chemicals and processes they work with for the protection of themselves, their fellow employees and the citizens of nearby communities. Training conducted in compliance with WAC 296-62-054, the hazard communication standard, will help employees to be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding MSDS. However, additional training in subjects such as operating procedures and safety work practices, emergency evacuation and response, safety procedures, routine and nonroutine work authorization activities, and other areas pertinent to process safety and health will need to be covered by an employer's training program. In establishing their training programs, employers must clearly define the employees to be trained and what subjects are to be covered in their training. Employers in setting up their training program will need to clearly establish the goals and objectives they wish to achieve with the training that they provide to their employees. The learning goals or objectives should be written in clear measurable terms before the training begins. These goals and objectives need to be tailored to each of the specific training modules or segments. Employers should describe the important actions and conditions under which the employee will demonstrate competence or knowledge as well as what is acceptable performance. Hands-on-training where employees are able to use their senses beyond listening, will enhance learning. For example, operating personnel, who will work in a control room or at control panels, would benefit by being trained at a simulated control panel or panels. Upset conditions of various types could be displayed on the simulator, and then the employee could go through the proper operating procedures to bring the simulator panel back to the normal operating parameters. A training environment could be created to help the trainee feel the full reality of the situation but, of course, under controlled conditions. This realistic type of training can be very effective in teaching employees correct procedures while

allowing them to also see the consequences of what might happen if they do not follow established operating procedures. Other training techniques using videos or on-the-job training can also be very effective for teaching other job tasks, duties, or other important information. An effective training program will allow the employee to fully participate in the training process and to practice their skill or knowledge. Employers need to periodically evaluate their training programs to see if the necessary skills, knowledge, and routines are being properly understood and implemented by their trained employees. The means or methods for evaluating the training should be developed along with the training program goals and objectives. Training program evaluation will help employers to determine the amount of training their employees understood, and whether the desired results were obtained. If, after the evaluation, it appears that the trained employees are not at the level of knowledge and skill that was expected, the employer will need to revise the training program, provide retraining, or provide more frequent refresher training sessions until the deficiency is resolved. Those who conducted the training and those who received the training should also be consulted as to how best to improve the training process. If there is a language barrier, the language known to the trainees should be used to reinforce the training messages and information. Careful consideration must be given to assure that employees including maintenance and contract employees receive current and updated training. For example, if changes are made to a process, impacted employees must be trained in the changes and understand the effects of the changes on their job tasks (e.g., any new operating procedures pertinent to their tasks). Additionally, as already discussed the evaluation of the employee's absorption of training will certainly influence the need for training.

(7) Contractors. Employers who use contractors to perform work in and around processes that involve highly hazardous chemicals, will need to establish a screening process so that they hire and use contractors who accomplish the desired job tasks without compromising the safety and health of employees at a facility. For contractors, whose safety performance on the job is not known to the hiring employer, the employer will need to obtain information on injury and illness rates and experience and should obtain contractor references. Additionally, the employer must assure that the contractor has the appropriate job skills, knowledge and certifications (such as for pressure vessel welders). Contractor work methods and experiences should be evaluated. For example, does the contractor conducting demolition work swing loads over operating processes or does the contractor avoid such hazards? Maintaining a site injury and illness log for contractors is another method employers must use to track and maintain current knowledge of work activities involving contract employees working on or adjacent to covered processes. Injury and illness logs of both the employer's employees and contract employees allow an employer to have full knowledge of process injury and illness experience. This log will also contain information which will be of use to those auditing process safety management compliance and those involved in incident investigations. Contract employees must perform their work safely. Considering that contractors often perform very specialized and potentially hazardous tasks such as confined space entry activities and nonroutine repair activities it is quite important that their activities be controlled while they are working on or near a covered process. A permit system or work authorization system for these activities would also be helpful to all affected employers. The use of a work authorization system keeps an employer informed of contract employee activities, and as a benefit the employer will have better coordination and more management control over the work being performed in the process area. A well run and well maintained process where employee safety is fully recognized will benefit all of those who work in the facility whether they be contract employees or employees of the owner.

(8) Prestartup safety. For new processes, the employer will find a PHA helpful in improving the design and construction of the process from a reliability and quality point of view. The safe operation of the new process will be enhanced by making use of the PHA recommendations before final installations are completed. P&Ids are to be completed along with having the operating procedures in place and the operating staff trained to run the process before startup. The initial startup procedures and normal operating procedures need to be fully evaluated as part of the prestartup review to assure a safe transfer into the normal operating mode for meeting the process parameters. For existing processes that have been shutdown for turnaround, or modification, etc., the employer must assure that any changes other than "replacement in kind" made to the process during shutdown go through the management of change procedures. P&Ids will need to be updated as necessary, as well as operating procedures and instructions. If the changes made to the process during shutdown are significant and impact the training program, then operating personnel as well as employees engaged in routine and nonroutine work in the process area may need some refresher or additional training in light of the changes. Any incident investigation recommendations, compliance audits or PHA recommendations need to be reviewed as well to see what impacts they may have on the process before beginning the startup.

(9) Mechanical integrity. Employers will need to review their maintenance programs and schedules to see if there are areas where "breakdown" maintenance is used rather than an ongoing mechanical integrity program. Equipment used to process, store, or handle highly hazardous chemicals needs to be designed, constructed, installed, and maintained to minimize the risk of releases of such chemicals. This requires that a mechanical integrity program be in place to assure the continued integrity of process equipment. Elements of a mechanical integrity program include the identification and categorization of equipment and instrumentation, inspections and tests, testing and inspection frequencies, development of maintenance procedures, training of maintenance personnel, the establishment of criteria for acceptable test results, documentation of test and inspection results, and documentation of manufacturer recommendations as to meantime to failure for equipment and instrumentation. The first line of defense an employer has available is to operate and maintain the process as designed, and to keep the chemicals contained. This line of defense is backed up

by the next line of defense which is the controlled release of chemicals through venting to scrubbers or flares, or to surge or overflow tanks which are designed to receive such chemicals, etc. These lines of defense are the primary lines of defense or means to prevent unwanted releases. The secondary lines of defense would include fixed fire protection systems like sprinklers, water spray, or deluge systems, monitor guns, etc., dikes, designed drainage systems, and other systems which would control or mitigate hazardous chemicals once an unwanted release occurs. These primary and secondary lines of defense are what the mechanical integrity program needs to protect and strengthen these primary and secondary lines of defenses where appropriate. The first step of an effective mechanical integrity program is to compile and categorize a list of process equipment and instrumentation for inclusion in the program. This list would include pressure vessels, storage tanks, process piping, relief and vent systems, fire protection system components, emergency shutdown systems, and alarms and interlocks and pumps. For the categorization of instrumentation and the listed equipment the employer would prioritize which pieces of equipment require closer scrutiny than others. Meantime to failure of various instrumentation and equipment parts would be known from the manufacturer's data or the employer's experience with the parts, which would then influence the inspection and testing frequency and associated procedures. Also, applicable codes and standards such as the National Board Inspection Code, or those from the American Society for Testing and Material, American Petroleum Institute, National Fire Protection Association, American National Standards Institute, American Society of Mechanical Engineers, and other groups, provide information to help establish an effective testing and inspection frequency, as well as appropriate methodologies. The applicable codes and standards provide criteria for external inspections for such items as foundation and supports, anchor bolts, concrete or steel supports, guy wires, nozzles and sprinklers, pipe hangers, grounding connections, protective coatings and insulation, and external metal surfaces of piping and vessels, etc. These codes and standards also provide information on methodologies for internal inspection, and a frequency formula based on the corrosion rate of the materials of construction. Also, erosion both internal and external needs to be considered along with corrosion effects for piping and valves. Where the corrosion rate is not known, a maximum inspection frequency is recommended, and methods of developing the corrosion rate are available in the codes. Internal inspections need to cover items such as vessel shell, bottom and head; metallic linings; nonmetallic linings; thickness measurements for vessels and piping; inspection for erosion, corrosion, cracking and bulges; internal equipment like trays, baffles, sensors, and screens for erosion, corrosion or cracking and other deficiencies. Some of these inspections may be performed by state or local government inspectors under state and local statutes. However, each employer needs to develop procedures to ensure that tests and inspections are conducted properly and that consistency is maintained even where different employees may be involved. Appropriate training is to be provided to maintenance personnel to ensure that they understand the preventive maintenance program procedures, safe practices, and the proper use and application of special equipment or unique tools that may be required. This training is part of the overall training program called for in the standard. A quality assurance system is needed to help ensure that the proper materials of construction are used, that fabrication and inspection procedures are proper, and that installation procedures recognize field installation concerns. The quality assurance program is an essential part of the mechanical integrity program and will help to maintain the primary and secondary lines of defense that have been designed into the process to prevent unwanted chemical releases or those which control or mitigate a release. "As built" drawings, together with certifications of coded vessels and other equipment, and materials of construction need to be verified and retained in the quality assurance documentation. Equipment installation jobs need to be properly inspected in the field for use of proper materials and procedures and to assure that qualified craftsmen are used to do the job. The use of appropriate gaskets, packing, bolts, valves, lubricants, and welding rods need to be verified in the field. Also procedures for installation of safety devices need to be verified, such as the torque on the bolts on ruptured disc installations, uniform torque on flange bolts, proper installation of pump seals, etc. If the quality of parts is a problem, it may be appropriate to conduct audits of the equipment supplier's facilities to better assure proper purchases of required equipment which is suitable for its intended service. Any changes in equipment that may become necessary will need to go through the management of change procedures.

(10) Nonroutine work authorizations. Nonroutine work which is conducted in process areas needs to be controlled by the employer in a consistent manner. The hazards identified involving the work that is to be accomplished must be communicated to those doing the work, but also to those operating personnel whose work could affect the safety of the process. A work authorization notice or permit must have a procedure that describes the steps the maintenance supervisor, contractor representative or other person needs to follow to obtain the necessary clearance to get the job started. The work authorization procedures need to reference and coordinate, as applicable, lockout/tagout procedures, line breaking procedures, confined space entry procedures and hot work authorizations. This procedure also needs to provide clear steps to follow once the job is completed in order to provide closure for those that need to know the job is now completed and equipment can be returned to normal.

(11) Managing change. To properly manage changes to process chemicals, technology, equipment and facilities, one must define what is meant by change. In this process safety management standard, change includes all modifications to equipment, procedures, raw materials and processing conditions other than "replacement in kind." These changes need to be properly managed by identifying and reviewing them prior to implementation of the change. For example, the operating procedures contain the operating parameters (pressure limits, temperature ranges, flow rates, etc.) and the importance of operating within these limits. While the operator must have the flexibility to maintain safe operation within the established parameters, any operation outside of these parameters requires review and approval by a written management of change procedure. Management of change covers such as changes in process technology and changes to equipment and instrumentation. Changes in process

technology can result from changes in production rates, raw materials, experimentation, equipment unavailability, new equipment, new product development, change in catalyst and changes in operating conditions to improve yield or quality. Equipment changes include among others change in materials of construction, equipment specifications, piping prearrangements, experimental equipment, computer program revisions and changes in alarms and interlocks. Employers need to establish means and methods to detect both technical changes and mechanical changes. Temporary changes have caused a number of catastrophes over the years, and employers need to establish ways to detect temporary changes as well as those that are permanent. It is important that a time limit for temporary changes be established and monitored since, without control, these changes may tend to become permanent. Temporary changes are subject to the management of change provisions. In addition, the management of change procedures are used to insure that the equipment and procedures are returned to their original or designed conditions at the end of the temporary change. Proper documentation and review of these changes is invaluable in assuring that the safety and health considerations are being incorporated into the operating procedures and the process. Employers may wish to develop a form or clearance sheet to facilitate the processing of changes through the management of change procedures. A typical change form may include a description and the purpose of the change, the technical basis for the change, safety and health considerations, documentation of changes for the operating procedures, maintenance procedures, inspection and testing, P&Ids, electrical classification, training and communications, prestartup inspection, duration if a temporary change, approvals and authorization. Where the impact of the change is minor and well understood, a check list reviewed by an authorized person with proper communication to others who are affected may be sufficient. However, for a more complex or significant design change, a hazard evaluation procedure with approvals by operations, maintenance, and safety departments may be appropriate. Changes in documents such as P&Ids, raw materials, operating procedures, mechanical integrity programs, electrical classifications, etc., need to be noted so that these revisions can be made permanent when the drawings and procedure manuals are updated. Copies of process changes need to be kept in an accessible location to ensure that design changes are available to operating personnel as well as to PHA team members when a PHA is being done or one is being updated.

(12) Investigation of incidents. Incident investigation is the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. The intent of an incident investigation is for employers to learn from past experiences and thus avoid repeating past mistakes. The incidents for which WISHA expects employers to become aware and to investigate are the types of events which result in or could reasonably have resulted in a catastrophic release. Some of the events are sometimes referred to as "near misses," meaning that a serious consequence did not occur, but could have. Employers need to develop in-house capability to investigate incidents that occur in their facilities. A team needs to be assembled by the employer and trained in the techniques of investigation including how to conduct interviews of witnesses, needed documentation and report writing. A multidisciplinary team is better able to gather the facts of the event and to analyze them and develop plausible scenarios as to what happened, and why. Team members should be selected on the basis of their training, knowledge and ability to contribute to a team effort to fully investigate the incident. Employees in the process area where the incident occurred should be consulted, interviewed, or made a member of the team. Their knowledge of the events form a significant set of facts about the incident which occurred. The report, its findings and recommendations are to be shared with those who can benefit from the information. The cooperation of employees is essential to an effective incident investigation. The focus of the investigation should be to obtain facts, and not to place blame. The team and the investigation process should clearly deal with all involved individuals in a fair, open, and consistent manner.

(13) Emergency preparedness. Each employer must address what actions employees are to take when there is an unwanted release of highly hazardous chemicals. Emergency preparedness or the employer's tertiary (third) lines of defense are those that will be relied on along with the secondary lines of defense when the primary lines of defense which are used to prevent an unwanted release fail to stop the release. Employers will need to decide if they want employees to handle and stop small or minor incidental releases. Whether they wish to mobilize the available resources at the plant and have them brought to bear on a more significant release. Or whether employers want their employees to evacuate the danger area and promptly escape to a preplanned safe zone area, and allow the local community emergency response organizations to handle the release. Or whether the employer wants to use some combination of these actions. Employers will need to select how many different emergency preparedness or tertiary lines of defense they plan to have and then develop the necessary plans and procedures, and appropriately train employees in their emergency duties and responsibilities and then implement these lines of defense. Employers at a minimum must have an emergency action plan which will facilitate the prompt evacuation of employees due to an unwanted release of a highly hazardous chemical. This means that the employer will have a plan that will be activated by an alarm system to alert employees when to evacuate and, that employees who are physically impaired, will have the necessary support and assistance to get them to the safe zone as well. The intent of these requirements is to alert and move employees to a safe zone quickly. Delaying alarms or confusing alarms are to be avoided. The use of process control centers or similar process buildings in the process area as safe areas is discouraged. Recent catastrophes have shown that a large life loss has occurred in these structures because of where they have been sited and because they are not necessarily designed to withstand over-pressures from shockwaves resulting from explosions in the process area. Unwanted incidental releases of highly hazardous chemicals in the process area must be addressed by the employer as to what actions employees are to take. If the employer wants employees to evacuate the area, then the emergency action plan will be activated. For

outdoor processes where wind direction is important for selecting the safe route to a refuge area, the employer should place a wind direction indicator such as a wind sock or pennant at the highest point that can be seen throughout the process area. Employees can move in the direction of cross wind to upwind to gain safe access to the refuge area by knowing the wind direction. If the employer wants specific employees in the release area to control or stop the minor emergency or incidental release, these actions must be planned for in advance and procedures developed and implemented. Preplanning for handling incidental releases for minor emergencies in the process area needs to be done, appropriate equipment for the hazards must be provided, and training conducted for those employees who will perform the emergency work before they respond to handle an actual release. The employer's training program, including the hazard communication standard training is to address the training needs for employees who are expected to handle incidental or minor releases. Preplanning for releases that are more serious than incidental releases is another important line of defense to be used by the employer. When a serious release of a highly hazardous chemical occurs, the employer through preplanning will have determined in advance what actions employees are to take. The evacuation of the immediate release area and other areas as necessary would be accomplished under the emergency action plan. If the employer wishes to use plant personnel such as a fire brigade, spill control team, a hazardous materials team, or use employees to render aid to those in the immediate release area and control or mitigate the incident, these actions are covered by WAC 296-62-300, the hazardous waste operations and emergency response (HAZWOPER) standard. If outside assistance is necessary, such as through mutual aid agreements between employers or local government emergency response organizations, these emergency responders are also covered by HAZWOPER. The safety and health protections required for emergency responders are the responsibility of their employers and of the on-scene incident commander. Responders may be working under very hazardous conditions and therefore the objective is to have them competently led by an on-scene incident commander and the commander's staff, properly equipped to do their assigned work safely, and fully trained to carry out their duties safely before they respond to an emergency. Drills, training exercises, or simulations with the local community emergency response planners and responder organizations is one means to obtain better preparedness. This close cooperation and coordination between plant and local community emergency preparedness managers will also aid the employer in complying with the Environmental Protection Agency's risk management plan criteria. One effective way for medium to large facilities to enhance coordination and communication during emergencies for on plant operations and with local community organizations is for employers to establish and equip an emergency control center. The emergency control center would be sited in a safe zone area so that it could be occupied throughout the duration of an emergency. The center would serve as the major communication link between the on-scene incident commander and plant or corporate management as well as with the local community officials. The communication equipment in the emergency control center should include a network to receive and transmit information by telephone, radio, or other means. It is important to have a backup communication network in case of power failure or one communication means fails. The center should also be equipped with the plant layout and community maps, utility drawings including fire water, emergency lighting, appropriate reference materials such as a government agency notification list, company personnel phone list, SARA Title III reports and material safety data sheets, emergency plans and procedures manual, a listing with the location of emergency response equipment, mutual aid information, and access to meteorological or weather condition data and any dispersion modeling data.

(14) Compliance audits. Employers need to select a trained individual or assemble a trained team of people to audit the process safety management system and program. A small process or plant may need only one knowledgeable person to conduct an audit. The audit is to include an evaluation of the design and effectiveness of the process safety management system and a field inspection of the safety and health conditions and practices to verify that the employer's systems are effectively implemented. The audit should be conducted or led by a person knowledgeable in audit techniques and who is impartial towards the facility or area being audited. The essential elements of an audit program include planning, staffing, conducting the audit, evaluation and corrective action, follow-up and documentation. Planning in advance is essential to the success of the auditing process. Each employer needs to establish the format, staffing, scheduling, and verification methods prior to conducting the audit. The format should be designed to provide the lead auditor with a procedure or checklist which details the requirements of each section of the standard. The names of the audit team members should be listed as part of the format as well. The checklist, if properly designed, could serve as the verification sheet which provides the auditor with the necessary information to expedite the review and assure that no requirements of the standard are omitted. This verification sheet format could also identify those elements that will require evaluation or a response to correct deficiencies. This sheet could also be used for developing the follow-up and documentation requirements. The selection of effective audit team members is critical to the success of the program. Team members should be chosen for their experience, knowledge, and training and should be familiar with the processes and with auditing techniques, practices, and procedures. The size of the team will vary depending on the size and complexity of the process under consideration. For a large, complex, highly instrumented plant, it may be desirable to have team members with expertise in process engineering and design, process chemistry, instrumentation and computer controls, electrical hazards and classifications, safety and health disciplines, maintenance, emergency preparedness, warehousing or shipping, and process safety auditing. The team may use part-time members to provide for the depth of expertise required as well as for what is actually done or followed, compared to what is written. An effective audit includes a review of the relevant documentation and process safety information, inspection of the physical facilities, and interviews with all levels of plant personnel. Utilizing the audit procedure and checklist developed in the preplanning stage, the audit team can systematically analyze compliance with the provisions of the

standard and any other corporate policies that are relevant. For example, the audit team will review all aspects of the training program as part of the overall audit. The team will review the written training program for adequacy of content, frequency of training, effectiveness of training in terms of its goals and objectives as well as to how it fits into meeting the standard's requirements, documentation, etc. Through interviews, the team can determine the employee's knowledge and awareness of the safety procedures, duties, rules, emergency response assignments, etc. During the inspection, the team can observe actual practices such as safety and health policies, procedures, and work authorization practices. This approach enables the team to identify deficiencies and determine where corrective actions or improvements are necessary. An audit is a technique used to gather sufficient facts and information, including statistical information, to verify compliance with standards. Auditors should select as part of their preplanning a sample size sufficient to give a degree of confidence that the audit reflects the level of compliance with the standard. The audit team, through this systematic analysis, should document areas which require corrective action as well as those areas where the process safety management system is effective and working in an effective manner. This provides a record of the audit procedures and findings, and serves as a baseline of operation data for future audits. It will assist future auditors in determining changes or trends from previous audits. Corrective action is one of the most important parts of the audit. It includes not only addressing the identified deficiencies, but also planning, followup, and documentation. The corrective action process normally begins with a management review of the audit findings. The purpose of this review is to determine what actions are appropriate, and to establish priorities, timetables, resource allocations, and requirements and responsibilities. In some cases, corrective action may involve a simple change in procedure or minor maintenance effort to remedy the concern. Management of change procedures need to be used, as appropriate, even for what may seem to be a minor change. Many of the deficiencies can be acted on promptly, while some may require engineering studies or indepth review of actual procedures and practices. There may be instances where no action is necessary and this is a valid response to an audit finding. All actions taken, including an explanation where no action is taken on a finding, needs to be documented as to what was done and why. It is important to assure that each deficiency identified is addressed, the corrective action to be taken noted, and the audit person or team responsible be properly documented by the employer. To control the corrective action process, the employer should consider the use of a tracking system. This tracking system might include periodic status reports shared with affected levels of management, specific reports such as completion of an engineering study, and a final implementation report to provide closure for audit findings that have been through management of change, if appropriate, and then shared with affected employees and management. This type of tracking system provides the employer with the status of the corrective action. It also provides the documentation required to verify that appropriate corrective actions were taken on deficiencies identified in the audit.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-67-291, filed 10/20/93, effective 12/1/93; 92-17-022 (Order 92-06), § 296-67-291, filed 8/10/92, effective 9/10/92.]

## Chapter 296-104 WAC
## BOARD OF BOILER RULES—SUBSTANTIVE

WAC



**WAC 296-104-010 Definitions.** (1) "Director" shall mean the director of the department of labor and industries.

(2) "Board of boiler rules" shall mean the board created by law and empowered to make, alter, amend, and interpret rules and regulations for the safe and proper construction, installation, repair, and use of boilers and for the proper construction, installation, and repair of unfired pressure vessels in this state.

(3) "Chief inspector" shall mean the chief boiler inspector appointed under RCW 70.79.100.

(4) "Deputy inspector" shall mean a deputy inspector of boilers and unfired pressure vessels appointed by the chief boiler inspector of Washington under the provisions of RCW 70.79.120.

(5) "Special inspector" shall mean an inspector holding a Washington commission, who is regularly employed by an insurance company authorized to insure against loss from explosion of boilers and unfired pressure vessels in this state, or who is continuously employed by any company operating unfired pressure vessels in this state for the purpose of making inspections of unfired pressure vessels used or to be used by such company.

(6) "Inspector" shall mean the chief boiler inspector, a deputy inspector, or a special inspector.

(7) "Certificate of competency" shall mean a certificate issued to a person who has passed an examination prescribed by the board of boiler rules.

(8) "Department" as used herein shall mean the department of labor and industries of the state of Washington.

(9) "Owner" or "user" shall mean a person, firm, or corporation owning or operating any boiler or unfired pressure vessel within the state.

(10) "ASME Code" shall mean the boiler and pressure vessel code of the American Society of Mechanical Engineers with amendments and interpretations thereto made and approved by the council of the society which have been regularly adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

(11) "Existing installations" shall mean any boiler or unfired pressure vessel constructed, installed, placed in operation, or contracted for before January 1, 1952.

(12) "Approved" shall mean approved by the chief boiler inspector as evidenced by his issuance of an inspection certificate.

(13) "Standard boiler or unfired pressure vessel" shall mean a boiler or unfired pressure vessel which bears the ASME stamp.

(14) "Nonstandard boiler or unfired pressure vessel" shall mean a boiler or unfired pressure vessel that does not bear the ASME stamp.

(15) "Boiler" shall mean a closed vessel used for heating water or liquid or for generating steam or vapor by the direct application of heat.

(16) "Direct application of heat" shall mean the firing of any fuel, solid, liquid, or gaseous, including electrical elements of any description.

(17) "Power boiler" shall mean a boiler used to produce steam or vapor at a pressure exceeding 15 lbs. per square inch gage, or a boiler used for heating water or liquid to a pressure exceeding 160 psi. or to a temperature exceeding 250°F.

(18) "Low pressure heating boiler" shall mean a boiler operated at a pressure not exceeding 15 lbs. per square inch gage steam, or at a pressure not exceeding 160 lbs. per square inch and a temperature not exceeding 250°F. for water.

(19) "Hot water supply boiler" shall mean a low pressure boiler used to heat water to a temperature not exceeding 200°F.

(20) "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.

(21) "Unfired pressure vessel" shall mean a closed vessel in which pressure is obtained from an external source, or from an indirect application of heat, including steam or hot water coils, converters or heat exchangers.

(22) "Reinstalled boiler or unfired pressure vessel" shall mean a boiler or unfired pressure vessel removed from its original setting and reerected at the same location or at a new location without change of ownership.

(23) "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.

(24) "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.

(25) "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 inspection of the interior. An ultrasonic examination of unfired pressure vessels 36" diameter and under, shall constitute an internal inspection.

(26) "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.

(27) "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.

(28) "Fusion welding" shall mean a process of welding metals in a molten, or molten and vaporous state, without the application of mechanical pressure or blows. Such welding may be accomplished by the oxy-acetylene or oxy-hydrogen flame or by the electric arc. Thermit welding shall be classified as fusion welding.

(29) "Major repair" shall mean one upon which the strength of a boiler or unfired pressure vessel depends.

(30) "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.

(31) "Attendant" shall mean the person in charge of the operation of a boiler or unfired pressure vessel.

(32) "Automatic operation of a boiler" shall mean full control of feed water and fuel in order to maintain the pressure and temperature constant 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, or power failure.

(33) "Alteration" is a structural modification of, or a departure from an original design or existing construction.

(34) "Repair" is a restoration of any damaged or impaired part to an effective and safe condition.

(35) "Domestic and/or residential purposes" shall mean serving a private residence or an apartment house of less than six families.

[Statutory Authority: RCW 70.79.040. 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 296-104-055 Examination fees.** A fee of sixty dollars will be charged for each applicant taking the examination for a certificate of competency or any examination sponsored by the National Board of Boiler and Pressure Vessel Inspectors. 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 70.79.040. 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 296-104-200 Standards for new construction.** The standards for new construction are the 1992 edition, with addenda, of ASME Boiler and Pressure Vessel Code, Sections I, III, IV, VIII, and X, the 1987 edition of ASME/ANSI PVHO-1 (Standard for Pressure Vessels for Human Occupancy). These codes and standards may be used on or after the date of issue and become mandatory twelve months after adoption by the board as specified in RCW 70.79.050(2). The board recognizes that the ASME

Code states that new editions of the code become mandatory on issue and that subsequent addenda become mandatory six months after the date of issue. Also, in circumstances such as nuclear systems, the time period for addenda becoming mandatory is defined in the Code of Federal Regulations.

[Statutory Authority: RCW 70.79.040. 93-12-014, § 296-104-200, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-200, filed 5/20/92, effective 6/20/92; 91-11-107, § 296-104-200, filed 5/22/91, effective 6/22/91; 90-04-009, § 296-104-200, filed 1/26/90, effective 2/26/90. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-01-088 (Order 85-26), § 296-104-200, filed 12/19/85. Statutory Authority: RCW 70.79.030 and 70.79.330. 84-11-016 (Order 84-09), § 296-104-200, filed 5/10/84; 82-24-025 (Order 82-36), § 296-104-200, filed 11/23/82, effective 1/1/83. Statutory Authority: RCW 70.79.030. 82-05-003 (Order 82-2), § 296-104-200, filed 2/4/82; 81-12-012 (Order 81-10), § 296-104-200, filed 5/28/81; 81-01-114 (Order 80-28), § 296-104-200, filed 12/24/80; 80-05-065 (Order 80-7), § 296-104-200, filed 4/23/80; 79-05-054 (Order 79-7), § 296-104-200, filed 4/30/79; 78-10-096 (Order 78-19), § 296-104-200, filed 10/3/78; Order 77-23, § 296-104-200, filed 11/8/77; Order 77-9, § 296-104-200, filed 5/26/77; Order 75-35, § 296-104-200, filed 10/29/75; Order 74-37, § 296-104-200, filed 11/8/74; Order 73-1, § 296-104-200, filed 3/22/73; Order 72-17, § 296-104-200, filed 9/28/72; Order 72-11, § 296-104-200, filed 7/7/72; Part IV, § 1, filed 3/23/60.]

**WAC 296-104-500 Nonnuclear repairs.** Where a repair, involving welding to a pressure retaining part is performed, a report of welded repair, signed by the certificate holder and an [a] commissioned inspector shall be submitted to the department. Repairs to all boilers, pressure vessels, and their appurtenances shall conform to the rules contained in the 1992 National Board Inspection Code chapter III, including supplements 1, 2, 3, 4, and 6, except the following changes/authorizations are made:

(1) Owner-user special inspectors may only accept repairs on unfired pressure vessels operated by their respective companies per RCW 70.79.130.

(2) In addition to repair organizations holding a National Board "R" Certificate of Authorization, organizations holding an ASME Certificate of Authorization may make repairs provided repairs are covered in their Quality Control Manual. In all cases the material and workmanship shall comply with the rules contained in the appropriate sections of the ASME Code.

[Statutory Authority: RCW 70.79.040. 93-12-014, § 296-104-500, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-500, filed 5/20/92, effective 6/20/92. Statutory Authority: RCW 70.79.030. 86-04-059 (Order 86-01), § 296-104-500, filed 2/4/86. Statutory Authority: RCW 70.79.030 and 70.79.330. 84-21-012 (Order 84-20), § 296-104-500, filed 10/5/84; Part VII, § 1, filed 3/23/60.]

**WAC 296-104-501 Nonnuclear alterations.** Physical alterations may not be performed by an "R" stamp holder. Physical alterations shall only be performed by those parties with the appropriate ASME Certificate of Authorization. Nonphysical alterations shall be performed using procedures acceptable to the department. Where alterations are accomplished, copies of all alteration reports, such as reports of welded or rerated alterations, shall be sent to the department. With the exceptions above, alterations to all boilers, pressure vessels, and their appurtenances shall conform to the rules contained in the 1992 National Board Inspection Code chapter III, including supplements 1, 2, 3, 4, and 6.

[Statutory Authority: RCW 70.79.040. 93-12-014, § 296-104-501, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-501, filed 5/20/92, effective 6/20/92. Statutory Authority: RCW 70.79.030. 86-04-059 (Order 86-01), § 296-104-501, filed 2/4/86.]

**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 | 25.00 | 20.00 |
| All other boilers less than 500 sq. ft. | 30.00 | 20.00 |
| 500 sq. ft. to 2500 sq. ft. | 50.00 | 25.00 |
| Each additional 2500 sq. ft. of total heating surface, or any portion thereof | 20.00 | 10.00 |

| Power boilers: | Internal | External |
|---|---|---|
| Less than 100 sq. ft. | 25.00 | 20.00 |
| 100 sq. ft. to less than 500 sq. ft. | 30.00 | 20.00 |
| 500 sq. ft. to 2500 sq. ft. | 50.00 | 25.00 |
| Each additional 2500 sq. ft. of total heating surface, or any portion thereof | 20.00 | 10.00 |

Pressure vessels:

| | | |
|---|---|---|
| Automatic utility hot water supply heaters per RCW 70.79.090 | | 5.00 |

All other pressure vessels:

Square feet shall be determined by multiplying the length of the shell by its diameter.

| | Internal | External |
|---|---|---|
| Less than 15 sq. ft. | 20.00 | 15.00 |
| 15 sq. ft. to less than 50 sq. ft. | 30.00 | 15.00 |
| 50 sq. ft. to 100 sq. ft. | 35.00 | 20.00 |
| For each additional 100 sq. ft. or any portion thereof | 10.00 | 35.00 |

Certificate of inspection fees: For objects inspected, the certificate of inspection fee is $15.00 per object.

Nonnuclear shop inspections, field construction inspections, and special inspection services:

| | |
|---|---|
| For each hour or part of an hour up to 8 hours | 30.00 |
| For each hour or part of an hour in excess of 8 hours | 45.00 |

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 | 45.00 |
| For each hour or part of an hour in excess of 8 hours | 70.00 |

Nonnuclear triennial shop survey and audit:

| | |
|---|---|
| When state is authorized inspection agency: | |
| For each hour or part of an hour up to 8 hours | 30.00 |
| For each hour or part of an hour in excess of 8 hours | 45.00 |
| When insurance company is authorized inspection agency: | |
| For each hour or part of an hour up to 8 hours | 45.00 |
| For each hour or part of an hour in excess of 8 hours | 70.00 |

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 $25.00. 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 70.79.040. 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 296-116 WAC
## PILOTAGE RULES

WAC



**WAC 296-116-082 Limitations on new pilots.** (1) The following limitations shall apply to a newly licensed pilot during his/her first five years of active service. Except where otherwise noted, the pilotage assignment may include docking and undocking of vessels within the tonnage limitations. All tonnages referred to are international tonnages.

(2) Progressive lifting of tonnage limitations requires a newly licensed pilot to satisfactorily complete the familiarization/training trips listed under the supervision of a five-year pilot. This veteran pilot shall complete and submit an evaluation form for each trip a new pilot performs. All of these trips must, if practical, be completed during the last ninety days of the license year.

(3) Puget Sound pilotage district - License limitations.

(a) First year:

(i) Not authorized to pilot loaded petroleum tankers.

(ii) Not authorized to pilot any vessels in excess of 25,000 gt or 660' in length or any passenger vessels in excess of 5,000 gt.

(b) Second year:

(i) Not authorized to pilot loaded petroleum tankers in excess of 25,000 gt.

(ii) Not authorized to pilot any vessels in excess of 30,000 gt.

(c) Third year:

(i) Not authorized to pilot loaded petroleum tankers in excess of 32,000 gt.

(ii) Not authorized to pilot any vessels in excess of 45,000 gt.

(d) Fourth year:

(i) Not authorized to pilot loaded petroleum tankers in excess of 32,000 gt.

(ii) Not authorized to pilot any vessels in excess of 60,000 gt.

(e) Fifth year:

(i) Not authorized to pilot loaded petroleum tankers in excess of 45,000 gt.

(ii) Not authorized to pilot any vessels in excess of 75,000 gt.

(4) Puget Sound pilotage district - Familiarization/training trips.

(a) Prior to the expiration of the FIRST license year, a new pilot must make three familiarization/training trips, two of which shall involve docking loaded petroleum tankers of not more than 25,000 gt; and the third trip shall involve a bridge and waterway transit of a vessel between 25,000 and 35,000 gt.

(b) Prior to the expiration of the SECOND license year, a new pilot must make three familiarization/training trips, two of which shall involve docking loaded petroleum tankers between 25,000 and 32,000 gt; and the third trip shall involve the anchoring of a vessel between 30,000 and 45,000 gt.

(c) Prior to the expiration of the THIRD license year, a new pilot must make two familiarization/training trips which shall involve the docking of vessels between 45,000 and 55,000 gt other than loaded petroleum tankers.

(d) Prior to the expiration of the FOURTH license year, a new pilot must make three familiarization/training trips which shall involve docking loaded petroleum tankers of between 32,000 and 45,000 gt.

(e) Prior to the expiration of the FIFTH license year, a new pilot must make three familiarization/training trips which shall involve two trips docking and one trip anchoring loaded petroleum tankers of 55,000 gt or larger.

(5) Grays Harbor pilotage district - License limitations.

(a) First year:

(i) Not authorized to pilot loaded tankers or barges carrying chemical or petroleum products.

(ii) Not authorized to pilot any vessels in excess of 17,500 gt.

(iii) Not authorized to pilot loaded or partially loaded vessels through the Chehalis River bridges.

(b) Second year:

(i) Not authorized to pilot loaded tankers or barges carrying chemical or petroleum products in excess of 10,000 gt.

(ii) Not authorized to pilot any vessels in excess of 20,000 gt.

(c) Third year: Not authorized to pilot any vessels in excess of 22,500 gt.

(d) Fourth Year: Not authorized to pilot any vessels in excess of 25,000 gt.

(e) Fifth year: Not authorized to pilot any vessels in excess of 27,500 gt.

(6) Grays Harbor pilotage district - Familiarization/training trips.

(a) Prior to the expiration of the FIRST license year, a new pilot must make ten familiarization/training trips. Eight of these trips shall be through the Chehalis River bridges on loaded or partially loaded vessels. The other trips may be elsewhere on the waterway but shall be on vessels in excess of 17,500 gt.

(b) Prior to the expiration of the SECOND license year, a new pilot must make three familiarization/training trips on vessels in excess of 20,000 gt. Two of these trips shall involve docking and passage to or from the sea buoy; and one of these trips shall involve turning the vessel in the waterway.

(c) Prior to the expiration of the THIRD license year, a new pilot must make three familiarization/training trips on vessels in excess of 25,000 gt to or from the sea buoy. Two of these trips shall involve docking these vessels.

(d) Prior to the expiration of the FOURTH license year, a new pilot must make three familiarization/training trips on vessels in excess of 27,500 gt or on the nearest larger size vessels available. Two of these trips shall involve docking these vessels; and one of these trips shall involve turning the vessel in the waterway.

(e) Prior to the expiration of the FIFTH license year, a new pilot must make three familiarization/training trips on vessels in excess of 30,000 gt or on the nearest larger size vessels available.

(7) The initial license shall contain the limitations contained above and list the date of commencement and expiration of such periods. If a newly licensed pilot is unable to pilot for forty-five days or more in any one of the five years, he shall notify the board and request a revised schedule of limitations.

(8) No pilot shall be dispatched to, or accept an assignment on, any vessel which exceeds the limitations of his/her license. On vessels in which there is more than one pilot assigned, the license limitations shall apply only to the pilot in charge.

(9) All limitations on a new pilot's license shall be lifted at the beginning of the sixth year of piloting provided he/she has submitted to the board a statement attesting to the fact that he/she has completed all the required familiarization/training requirements and the vessel simulator courses required.

[Statutory Authority: RCW 88.16.035 and 88.16.105. 93-09-016, § 296-116-082, filed 4/14/93, effective 5/15/93. Statutory Authority: RCW 88.16.105. 92-24-056, § 296-116-082, filed 11/30/92, effective 12/31/92; 92-08-051, § 296-116-082, filed 3/26/92, effective 4/26/92; 89-18-063 (Order 89-6, Resolution No. 89-6), § 296-116-082, filed 9/1/89, effective 10/2/89; 89-11-060 (Order 89-5, Resolution No. 89-5), § 296-116-082, filed 5/18/89. Statutory Authority: RCW 88.16.035. 80-03-081 (Order 79-6, Resolution No. 79-6), § 296-116-082, filed 3/4/80.]

**WAC 296-116-110 Details and requirements of annual license fee payment, physical examination report and reinstatement application.** (1) Annual license fees and reports on annual physical examinations pursuant to RCW 88.16.090 shall be submitted to the board on or before the anniversary date of the license. Each pilot shall ensure that the board, at all time, possesses a copy of his/her currently valid United States government license with radar endorsement issued by the United States Coast Guard.

(2) A pilot, who retires under his/her medical disability retirement plan, may apply for reinstatement of his/her pilot's license within five years from the date of their last pilotage assignment, provided they are capable of passing a physical examination without any restrictions as to full pilotage duties. The board may, at its discretion, waive all or part of the pilotage examination. The board shall require the pilot to complete a familiarization/training program prescribed by the board after a full review of all relevant factors. The board may also prescribe license limitations such as those contained in WAC 296-116-082.

[Statutory Authority: RCW 88.16.090. 93-07-076, § 296-116-110, filed 3/18/93, effective 4/18/93. Statutory Authority: RCW 88.16.035. 92-08-050, § 296-116-110, filed 3/26/92, effective 4/26/92; 80-03-081 (Order 79-6, Resolution No. 79-6), § 296-116-110, filed 3/4/80; Order 2-68, § 296-116-110, filed 11/1/68; § 11, effective 11/25/58.]

**WAC 296-116-185 Tariffs, and pilotage rates for the Grays Harbor pilotage district.**

CLASSIFICATION OF PILOTAGE SERVICE RATE

Piloting of vessels in the inland waters and tributaries of Grays Harbor:

Each vessel shall be charged according to its draft and tonnage. The draft charges shall be $47.07 per meter (or $14.32 per foot) and the tonnage charge shall be $0.1501 per net registered ton. The minimum net registered tonnage charge is $525.17. The charge for an extra vessel (in case of tow) is $300.11.

Boarding fee:

| | |
|---|---|
| Per each boarding/deboarding from a boat | $226.42 |

Harbor shifts:

| | |
|---|---|
| For each shift from dock to dock, dock to anchorage, anchorage to dock, or anchorage to anchorage | $376.46 |
| Delays per hour | $89.77 |
| Cancellation charge (pilot only) | $150.05 |
| Cancellation charge (pilot boat only) | $450.15 |

Travel allowance:

| | |
|---|---|
| Boarding or deboarding a vessel off Grays Harbor entrance | $69.67 |
| Pilot when traveling to an outlying port to join a vessel or returning through an outlying port from a vessel which has been piloted to sea shall be paid $525.18 for each day or fraction thereof, and the travel expense incurred | $525.18 |

Bridge transit:

| | |
|---|---|
| Charge for each bridge transited | $164.80 |

Miscellaneous:

The balance of amounts due for pilotage rates not paid within 30 days of invoice will be assessed at 1 1/2% per month late charge.

[Statutory Authority: RCW 88.16.035. 93-13-055, § 296-116-185, filed 6/16/93, effective 7/17/93; 93-03-080, § 296-116-185, filed 1/19/93, effective 2/19/93; 92-14-069, § 296-116-185, filed 6/26/92, effective 7/27/92; 91-08-008, § 296-116-185, filed 3/26/91, effective 4/26/91; 90-09-013, § 296-116-185, filed 4/6/90, effective 5/7/90; 89-08-042 (Order 89-3, Resolution No. 89-3), § 296-116-185, filed 3/31/89; 88-05-043 (Order 88-2, Resolution No. 88-2), § 296-116-185, filed 2/17/88, effective 3/21/88. Statutory Authority: RCW 88.16.035(4). 87-01-081 (Orders 86-9 and 86-10, Resolution Nos. 86-9 and 86-10), § 296-116-185, filed 12/19/86; 85-02-048 (Order 84-5, Resolution No. 84-5), § 296-116-185, filed 12/31/84; 83-15-012 (Order 83-3, Resolution No. 83-3), § 296-116-185, filed 7/12/83; 82-08-016 (Order 82-1, Resolution No. 82-1), § 296-116-185, filed 3/29/82; 81-07-009 (Order 81-1, Resolution No. 81-1), § 296-116-185, filed 3/6/81; 80-03-081 (Order 79-6, Resolution No. 79-6), § 296-116-185, filed 3/4/80; Order 2-68, § 296-116-185, filed 11/1/68.]

## WAC 296-116-300 Pilotage rates for the Puget Sound pilotage district.

| CLASSIFICATION | RATE |
|---|---|
| Ship length overall (LOA) Charges: | per LOA rate schedule in this section |
| Boarding fee: Per each boarding/deboarding at the Port Angeles pilot station. | $ 32.00 |
| Harbor shift - Live ship (Seattle Port) | LOA Zone I |
| Harbor shift - Live ship (other than Seattle Port) | LOA Zone I |
| Harbor shift - Dead ship | Double LOA Zone I |
| Dead ship towing charge: LOA of tug + LOA of tow + beam of tow | Double LOA Zone |

Any tow exceeding seven hours, two pilots are mandatory. Harbor shifts shall constitute and be limited to those services in moving vessels from dock to dock, from anchorage to dock, from dock to anchorage, or from anchorage to anchorage in the same port after all other applicable tariff charges for pilotage services have been recognized as payable.

Waterway and bridge charges:

Ships up to 90' beam:

A charge of $172.00 shall be in addition to bridge fees for any vessel movements both inbound and outbound required to transit south of Spokane Street Bridge in Seattle, south of Eleventh Street Bridge in any of the Tacoma waterways, in Port Gamble, or in the Snohomish River. Any vessel movements required to transit through bridges shall have an additional charge of $82.00 per bridge.

Ships 90' beam and/or over:

A charge of $232.00 shall be in addition to bridge fees for any vessel movements both inbound and outbound required to transit south of Spokane Street Bridge in Seattle and south of Eleventh Street Bridge in any of the Tacoma waterways. Any vessel movements required to transit through bridges shall have an additional charge of $162.00 per bridge.

(The above charges shall not apply to transit of vessels from Shilshole Bay to the limits of Lake Washington.)

Two or three pilots required:

In a case where two or three pilots are employed for a single vessel waterway or bridge transit, the second and/or third pilot charge shall include the bridge and waterway charge in addition to the harbor shift rate.

| | |
|---|---|
| Compass adjustment | $231.00 |
| Radio direction finder calibration | $231.00 |
| Launching vessels | $347.00 |
| Trial trips, 6 hours or less (Minimum $654.00) | $109.00 per hr. |
| Trial trips, over 6 hours (two pilots) | $218.00 per hr. |
| Shilshole Bay — Salmon Bay | $135.00 |
| Salmon Bay — Lake Union | $106.00 |
| Lake Union — Lake Washington (plus LOA zone from Webster Point) | $135.00 |
| Cancellation charge | LOA Zone I |
| Cancellation charge — Port Angeles (when a pilot is ordered and vessel proceeds to a port outside the Puget Sound pilotage district without stopping for pilot or when a pilot order is cancelled less than twelve hours prior to the original ETA.) | LOA Zone II |
| Docking delay after anchoring: | $109.00 per hr. |

Applicable harbor shift rate to apply, plus $109.00 per hour standby. No charge if delay is 60 minutes or less. If the delay is more than 60 minutes, charge is $109.00 for every hour or fraction thereof.

| | |
|---|---|
| Sailing delay: | $109.00 per hour |

No charge if delay is 60 minutes or less. If the delay is more than 60 minutes, charge is $109.00 for every hour or fraction thereof.

| | |
|---|---|
| Slowdown: | $109.00 per hour |

When a vessel chooses not to maintain its normal speed capabilities for reasons determined by the vessel and not the pilot, and when the difference in arrival time is one hour, or greater, from the predicted arrival time had the vessel maintained its normal speed capabilities, a charge of $109.00 per hour, and each fraction thereof, will be assessed for the resultant difference in arrival time.

Super ships:

20,000 to 50,000 gross tons:

Additional charge to LOA zone mileage of $0.0576 a gross ton for all gross tonnage in excess of 20,000 gross tons up to 50,000 gross tons.

50,000 gross tons and up:

In excess of 50,000 gross tons, the charge shall be $0.0689 per gross ton.

For vessels where a certificate of international gross tonnage is required, the appropriate international gross tonnage shall apply.

| | |
|---|---|
| Delayed arrival-Port Angeles: | $109.00 per hour |

When a pilot is ordered for an arriving inbound vessel at Port Angeles and the vessel does not arrive within two hours of its ETA, or its ETA is amended less than six hours prior to the original ETA, a charge of $109.00 for each hour delay, or fraction thereof, shall be assessed in addition to all other appropriate charges.

When a pilot is ordered for an arriving inbound vessel at Port Angeles and the ETA is delayed to six hours or more beyond the original ETA, a cancellation charge shall be assessed, in addition to all other appropriate charges, if the ETA was not amended at least twelve hours prior to the original ETA.

Transportation to vessels on Puget Sound:

| | |
|---|---|
| March Point or Anacortes | $144.00 |
| Bangor | 84.00 |
| Bellingham | 158.00 |
| Bremerton | 44.00 |
| Cherry Point | 175.00 |
| Dupont | 85.00 |
| Edmonds | 27.00 |
| Everett | 52.00 |

| | |
|---|---|
| Ferndale | 173.00 |
| Manchester | 66.00 |
| Mukilteo | 52.00 |
| Olympia | 108.00 |
| Point Wells | 27.00 |
| Port Gamble | 77.00 |
| Port Townsend (Indian Island) | 109.00 |
| Seattle | 15.00 |
| Semiahmoo (Blaine) | 196.00 |
| Tacoma | 56.00 |
| Tacoma Smelter | 66.00 |
| Winslow | 42.00 |

(a) Intraharbor transportation for the Port Angeles port area - transportation between Port Angeles pilot station and Port Angeles harbor docks - $15.00.

(b) Interport shifts: Transportation paid to and from both points.

(c) Intraharbor shifts: Transportation to be paid both ways. If intraharbor shift is cancelled on or before scheduled reporting time, transportation paid one way only.

(d) Cancellation: Transportation both ways unless notice of cancellation is received prior to scheduled reporting time in which case transportation need only be paid one way.

(e) Any new facilities or other seldom used terminals, not covered above, shall be based on mileage x $1.80 per mile.

Delinquent payment charge: 1 1/2% per month after 45 days from first billing.

Nonuse of pilots: Ships taking and discharging pilots without using their services through all Puget Sound and adjacent inland waters shall pay full pilotage fees on the LOA zone mileage basis from Port Angeles to destination, from place of departure to Port Angeles, or for entire distance between two ports on Puget Sound and adjacent inland waters.

LOA rate schedule

The following rate schedule is based upon distances furnished by National Oceanic and Atmospheric Administration, computed to the nearest half-mile and includes retirement fund contributions.

| LOA | ZONE I Intra Harbor | ZONE II 0-30 Miles | ZONE III 31-50 Miles | ZONE IV 51-75 Miles | ZONE V 76-100 Miles | ZONE VI 101 Miles & Over |
|---|---|---|---|---|---|---|
| Up to 449 | 162 | 254 | 441 | 660 | 890 | 1158 |
| 450 - 459 | 167 | 260 | 444 | 669 | 905 | 1163 |
| 460 - 469 | 171 | 263 | 449 | 680 | 918 | 1167 |
| 470 - 479 | 176 | 270 | 455 | 695 | 921 | 1170 |
| 480 - 489 | 181 | 275 | 457 | 708 | 926 | 1175 |
| 490 - 499 | 184 | 278 | 463 | 720 | 937 | 1181 |
| 500 - 509 | 193 | 283 | 471 | 730 | 944 | 1189 |
| 510 - 519 | 196 | 290 | 476 | 739 | 954 | 1193 |
| 520 - 529 | 198 | 300 | 483 | 743 | 962 | 1204 |
| 530 - 539 | 205 | 304 | 489 | 751 | 978 | 1216 |
| 540 - 549 | 208 | 308 | 500 | 760 | 994 | 1227 |
| 550 - 559 | 212 | 318 | 503 | 771 | 1000 | 1239 |
| 560 - 569 | 220 | 331 | 513 | 778 | 1012 | 1252 |
| 570 - 579 | 225 | 335 | 517 | 781 | 1021 | 1259 |
| 580 - 589 | 234 | 341 | 528 | 787 | 1028 | 1273 |
| 590 - 599 | 245 | 347 | 531 | 791 | 1043 | 1287 |
| 600 - 609 | 254 | 358 | 538 | 794 | 1054 | 1294 |
| 610 - 619 | 269 | 361 | 548 | 798 | 1066 | 1305 |
| 620 - 629 | 279 | 366 | 554 | 806 | 1078 | 1320 |
| 630 - 639 | 294 | 374 | 560 | 808 | 1086 | 1332 |
| 640 - 649 | 306 | 381 | 566 | 811 | 1098 | 1342 |
| 650 - 659 | 327 | 389 | 576 | 818 | 1111 | 1355 |
| 660 - 669 | 335 | 393 | 581 | 821 | 1122 | 1366 |
| 670 - 679 | 345 | 403 | 588 | 836 | 1135 | 1374 |
| 680 - 689 | 351 | 411 | 594 | 845 | 1145 | 1388 |
| 690 - 699 | 361 | 417 | 603 | 860 | 1158 | 1416 |
| 700 - 719 | 378 | 431 | 615 | 869 | 1179 | 1433 |
| 720 - 739 | 401 | 444 | 630 | 881 | 1204 | 1457 |
| 740 - 759 | 417 | 463 | 643 | 890 | 1227 | 1483 |
| 760 - 779 | 434 | 481 | 658 | 905 | 1252 | 1503 |
| 780 - 799 | 455 | 501 | 669 | 918 | 1273 | 1529 |
| 800 - 819 | 474 | 517 | 683 | 923 | 1294 | 1552 |
| 820 - 839 | 489 | 534 | 698 | 937 | 1320 | 1571 |
| 840 - 859 | 511 | 556 | 712 | 947 | 1342 | 1598 |
| 860 - 879 | 529 | 576 | 726 | 974 | 1366 | 1620 |
| 880 - 899 | 548 | 593 | 739 | 995 | 1388 | 1644 |
| 900 - 919 | 564 | 611 | 752 | 1019 | 1416 | 1668 |
| 920 - 939 | 582 | 630 | 771 | 1043 | 1433 | 1689 |
| 940 - 959 | 603 | 647 | 782 | 1066 | 1457 | 1711 |
| 960 - 979 | 618 | 666 | 796 | 1086 | 1483 | 1735 |
| 980 - 999 | 640 | 683 | 809 | 1111 | 1503 | 1758 |
| 1000 & over | 658 | 706 | 823 | 1135 | 1529 | 1782 |

[Statutory Authority: RCW 88.16.035. 93-12-133, § 296-116-300, filed 6/2/93, effective 7/3/93; 92-14-007, § 296-116-300, filed 6/19/92, effective 7/20/92; 91-11-074, § 296-116-300, filed 5/20/91, effective 6/20/91; 90-20-116, § 296-116-300, filed 10/2/90, effective 11/2/90; 90-08-095, § 296-116-300, filed 4/4/90, effective 5/5/90; 89-08-041 (Order 89-2, Resolution No. 89-2), § 296-116-300, filed 3/31/89. Statutory Authority: RCW 88.16.050. 88-05-039 (Order 88-1, Resolution No. 88-1), § 296-116-300, filed 2/16/88, effective 3/18/88. Statutory Authority: RCW 88.16.035(4). 87-01-081 (Orders 86-9 and 86-10, Resolution Nos. 86-9 and 86-10), § 296-116-300, filed 12/19/86; 86-19-066 (Order 86-6, Resolution No. 86-6), § 296-116-300, filed 9/16/86; 86-02-035 (Order 86-1, Resolution No. 86-1), § 296-116-300, filed 12/30/85; 85-02-048 (Order 84-5, Resolution No. 84-5), § 296-116-300, filed 12/31/84; 84-04-006 (Order 84-1, Resolution No. 84-1), § 296-116-300, filed 1/20/84; 83-17-055 (Order 83-6, Resolution No. 83-6), § 296-116-300, filed 8/17/83; 82-13-065 (Order 82-4, Resolution No. 82-4), § 296-116-300, filed 6/16/82. Statutory Authority: RCW 88.16.035. 81-12-017 (Order 81-2, Resolution No. 81-2), § 296-116-300, filed 5/29/81; 80-06-084 (Order 80-1, Resolution No. 80-1), § 296-116-300, filed 5/28/80. Statutory Authority: RCW 88.16.035(4). 79-07-033 (Order 79-4, Resolution No. 79-4), § 296-116-300, filed 6/19/79. Statutory Authority: Chapter 88.16 RCW and 1977 ex. sess. c 337, §§ 1 and 4. 78-02-008 (Order 78-1), § 296-116-300, filed 1/6/78, effective 2/10/78; Order 77-18, § 296-116-300, filed 9/20/77, effective 11/1/77; Order 76-24, § 296-116-300, filed 7/22/76; Order 75-3, § 296-116-300, filed 2/10/75; Order 74-2, § 296-116-300, filed 1/8/74; Order 73-8, § 296-116-300, filed 6/20/73 and Emergency Order 73-10, filed 7/19/73, effective 8/14/73; Order 70-7, § 296-116-300, filed 7/16/70; 7/25/67; 2/18/64; 10/29/62; 12/28/60; 3/23/60.]

**WAC 296-116-360 Exempt vessels.** Under the authority of RCW 88.16.070, application may be made to the board of pilotage commissioners to seek exemption from the pilotage requirements for the operation of a limited class of small passenger vessels or yachts, which are not more than five hundred gross tons (international), do not exceed two hundred feet in length, and are operated exclusively in the waters of the Puget Sound pilotage district and lower British Columbia. The owners or operators of such vessel or vessels must:

(1) Seek exemption at least sixty days prior to planned vessel operations in the Puget Sound pilotage district.

(2) Submit the petition requesting exemption to the chairperson, Washington state board of pilotage commissioners, with details concerning description of the vessel, the contemplated use of vessel, the proposed area of operation, the name and address of the vessel's owner, and the dates of planned operations. The board shall hold a hearing at a regularly scheduled board meeting to consider such exemption request.

The board, when granting such an exemption, may establish such conditions they deem necessary so that such an exemption shall not be detrimental to the public interest in regard to safe operation preventing loss of human lives, loss of property, and protecting the marine environment of the state of Washington.

One such condition shall be that the master of the vessel, shall at all times, hold as a minimum, a United States government license as a master of ocean or near coastal steam or motor vessels of not more than sixteen hundred gross tons or as a master of inland steam or motor vessels of not more than five hundred gross tons, such license to include a current radar endorsement.

The board shall annually, or at any other time when in the public interest, review any exemptions granted to the specified class of small vessels to ensure that each exempted vessel remains in compliance with the original exemption and any conditions to the exemption. The board shall have the authority to revoke such exemption when there is not continued compliance with the requirements for exemption.

[Statutory Authority: RCW 88.16.070. 93-07-077, § 296-116-360, filed 3/18/93, effective 4/18/93; 90-20-039, § 296-116-360, filed 9/25/90, effective 10/26/90; 88-09-015 (Order 88-6, Resolution No. 88-6), § 296-116-360, filed 4/13/88.]

## Chapter 296-125 WAC
## NONAGRICULTURAL EMPLOYMENT OF MINORS

WAC



**WAC 296-125-070 Special variances.** (1) A special variance, to facilitate flexibility in a minor's school and work requirements, shall be available upon a showing of good cause. Good cause for a special variance may be demonstrated for sixteen- and seventeen-year-old minors not working in house-to-house sales, according to the terms and procedures set out in this section. A special variance may be obtained only for exceptions to the standards governing:

(a) Maximum hours of work per week during a week when school is in session, up to a maximum of twenty-eight hours per week; and

(b) Maximum hours of work per day during a week when school is in session, up to a maximum of six hours per day.

(2) The conditions precedent to a finding of good cause for a special variance shall include the following:

(a) The employer of the minor shall hold a valid minor work permit; and

(b) The minor's school district or individual private school shall be designated to participate in the special variance procedure by the department, pursuant to the requirements of subsection (3) of this section.

(3)(a) Each school district or individual private school seeking designation by the department to participate in the special variance process shall enroll with the department, using a form provided by the department. Further, the district or individual private school shall agree to maintain a mandatory recordkeeping system specified by the department, and to use uniform criteria as described in subsection (7) of this section to evaluate variance requests. The enrollment form shall require, but not be limited to, the following information:

(i) Agreement to maintain the mandatory recordkeeping system;

(ii) Designation of a school official(s) at each school authorized to evaluate and approve or disapprove variance requests;

(iii) Agreement to use the uniform criteria in evaluating variance requests, including agreement to mandatory periodic review and reapproval of all special variances in effect as described in subsection (4) of this section;

(iv) Agreement to forward a copy of each variance form approved or denied by a school to the department within thirty days of the school's action; and

(v) Agreement to provide immediate access to all variance files during normal school office hours to agents of the department.

(b) Each participating school shall be responsible for ensuring that all sections on the variance form required to be filled out by the employer and the school are complete. Incomplete variances shall be deemed invalid and shall be cause for revocation of designation for participation of the school district or individual private school and of the employer in the special variance program, and shall be a violation of this chapter.

Upon evidence of incomplete variances, the department shall notify the school district or private school, in writing, of the revocation of enrollment in the special variance program.

The school district or private school may appeal the revocation, in writing, within thirty days of receipt of notice from the department. The written appeal shall be sent to the department pursuant to the procedures established by RCW 49.12.161 and 49.12.400. Such appeal shall not stay the effectiveness of an order of immediate restraint issued by the department pursuant to RCW 49.12.390.

(4) The special variance form to be valid shall be completed and signed by the employer, the minor, the minor's authorized school official pursuant to subsection (3) of this section, and the minor's parent or legal guardian. The minor's authorized school official and parent or legal guardian must reauthorize the special variance form, in writing, within forty-five days of the end of each regular grading period at the minor's school.

(5)(a) The department shall provide a form for the employer to complete that shall include, but need not be limited to, the following information to be provided by the employer to the minor, the authorized school official, and the minor's parent or legal guardian:

(i) The minor employee's work-related duties;

(ii) Maximum hours to be worked each week;

(iii) Length of work shifts;

(iv) Latest afternoon or evening hour to be worked by the minor employee;

(v) The number of days per week the minor employee will be required to work the latest afternoon or evening hour;

(vi) The employer's Unified Business Identifier (UBI) number; and

(vii) The date of expiration of the employer's minor work permit.

(b) The employer shall maintain all records of special variances according to the terms of WAC 296-125-050.

(c) No minor shall be permitted or suffered to work in excess of the maximum hours per week or per day during a week when school is in session, as prescribed by WAC 296-125-027 unless the minor's employer has a current, fully

completed and executed variance for the minor on file at the minor's workplace.

(d) Any change in conditions described by (a)(i) through (v) of this subsection, except a return to the hours of work limitations prescribed by WAC 296-125-027, shall require initiation and completion of a new special variance.

(6) The minor shall complete her or his section of the variance form after the employer has completed its section and before the form is submitted to the school, parent, or legal guardian. The minor shall provide her or his reasons for the special variance request.

(7)(a) Approval or disapproval by the school shall be premised on the employer holding a current valid minor work permit, and on an assessment of the information required to be provided by the employer including the following factors:

(i) Student attendance patterns;

(ii) Student academic progress;

(iii) Opportunities for the minor to participate in extracurricular activities;

(iv) Number of school nights worked;

(v) Lateness of evening hours worked;

(vi) Length of work shift; and

(vii) Student's rationale for requesting hours of work exceeding the standards in WAC 296-125-027.

(b) The special variance form shall require the school official to provide data to the department that shall include, but not be limited to, the following:

(i) Age of the minor;

(ii) Cumulative grade point average and attendance record of the minor prior to starting work; and

(iii) Grade point average and attendance record of the minor for each grading period immediately preceding the school's current approval or disapproval.

(c) A copy of each variance form approved or denied by a school shall be forwarded to the department within thirty days of the school's action.

(8) The parent or guardian shall by her or his signature approve or deny the variance and signify review of the minor's statement of rationale.

(9) Expiration. Special variances shall be issued only to employers with valid minor work permits and each special variance shall expire upon the expiration date of the employer's minor work permit that was in effect at the time of the issuance of the special variance. Upon renewal of a minor work permit, the employer must complete a new special variance.

(10) Revocation and suspension. The department may revoke or suspend a special variance if the department finds that a condition of the variance's execution is not being or has not been satisfied, the employer has violated the requirements of this chapter, or any other condition exists which is or could be detrimental to the health, safety, or welfare of a minor. Violation by the employer of the hours standards under WAC 296-125-027 or the hours specified in any special variance shall lead to loss of the right to participate in the special variance process for one year from a finding of violation by the department.

The parent, legal guardian, or the school may revoke the variance at any time by notifying the other parties to the variance and the department.

(11) Appeals. An appeal of an action by the department to refuse to issue or renew designation to participate in the special variance program, or to revoke or suspend a special variance or designation to participate in the special variance program must be filed in writing with the department within thirty days of the department's action, pursuant to the procedures established by RCW 49.12.161 and 49.12.400. Such appeal shall not stay the effectiveness of an order of immediate restraint issued by the department pursuant to RCW 49.12.390.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068 and 93-04-112, § 296-125-070, filed 12/11/92 and 2/3/93, effective 3/1/93 and 7/1/93.]

## Chapter 296-127 WAC
## PREVAILING WAGE

WAC



**WAC 296-127-010 Definitions for chapter 296-127 WAC.** (1) "Department" means the department of labor and industries.

(2) "Director" means the director of the department or his or her duly authorized deputy or representative.

(3) "Industrial statistician" means the industrial statistician of the department's employment standards, apprenticeship, and crime victims (ESAC) division.

(4) "Assistant director" means the assistant director of the employment standards, apprenticeship, and crime victims (ESAC) division or his or her duly authorized deputy or representative.

(5) "Contractor" means:

(a) The prime contractor, and each and every subcontractor, required to be registered under chapter 18.27 RCW and/or licensed under chapter 19.28 RCW, that performs any work on a public works project site, and/or is required to pay industrial insurance premiums as a construction company.

(b) Employers engaged in shipbuilding and ship repair, building service maintenance, and any fabricator or manufacturer that produces nonstandard items specifically for a public works project.

(c) Employers that contract with contractors or subcontractors for the purpose of the production and/or delivery of materials pursuant to the terms of WAC 296-127-018.

(6) The term municipality shall include every city, county, town, district, political subdivision, or other public agency thereof which is authorized by law to require the execution of public work, except drainage districts, diking districts, diking and drainage improvement districts, drainage improvement districts, diking improvement districts, consolidated diking and drainage improvement districts, consolidated drainage improvement districts, consolidated diking improvement districts, irrigation districts, or any such other districts as shall from time to time be authorized by law for the reclamation or development of waste or undeveloped lands.

(7)(a) The term "public work" shall include:

(i) All work, construction, alteration, enlargement, improvement, repair, and/or demolition that is executed by contract, purchase order, or any other legal agreement and that is executed at the cost of the state of Washington or of any municipality. The source of the funding shall not determine the applicability of the statute, and may include, but is not limited to, such sources as those payments made through contracts with insurance companies on behalf of the insured state or municipality;

(ii) All work, construction, alteration, enlargement, improvement, repair, and/or demolition which, by law, constitutes a lien or charge on any property of the state or of a municipality;

(iii) All work, construction, alteration, repair, or improvement, other than ordinary maintenance that the state or a municipality causes to be performed by a private party through a contract to rent, lease, or purchase at least fifty percent of the project by one or more state agencies or municipalities, pursuant to RCW 39.04.260;

(iv) Maintenance, except ordinary maintenance as defined by (b)(iii) of this subsection, when performed by contract. Maintenance is defined as keeping existing facilities in good usable, operational condition;

(v) Janitorial and building service maintenance as defined by WAC 296-127-023, when performed by contract, on public buildings and/or assets; and

(vi) The fabrication and/or manufacture of nonstandard items produced by contract specifically for a public works project as defined by (a)(i) through (v) of this subsection.

(b) The term "public work" shall not include:

(i) Work, construction, alteration, enlargement, improvement, repair, demolition, and/or maintenance for which no wage or salary compensation is paid, consistent with the requirements of RCW 35.21.278;

(ii) The construction, alteration, repair, or improvement of any municipal street railway system;

(iii) Ordinary maintenance which is defined as work not performed by contract and that is performed on a regularly scheduled basis (e.g., daily, weekly, monthly, seasonally, semiannually, but not less frequently than once per year), to service, check, or replace items that are not broken; or work not performed by contract that is not regularly scheduled but is required to maintain the asset so that repair does not become necessary.

(8) "Contract" means a contract, purchase order, or any other legal agreement in writing for public work to be performed for a fixed or determinable amount, which is duly awarded after advertisement and competitive bid. A contract that is awarded from a small works roster, or under the emergency provisions of state law, need not be advertised.

(9) "Residential construction" means construction, alteration, repair, improvement, or maintenance of single family dwellings, duplexes, apartments, condominiums, and other residential structures not to exceed four stories in height, including basement, when used solely as permanent residences. It does not include the utilities construction (water and sewer lines), or work on streets, or work on other structures (e.g., for recreation and business.)

[Statutory Authority: RCW 39.12.070. 94-01-100, § 296-127-010, filed 12/16/93, effective 1/16/94. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-010, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-010, filed 10/31/88. Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-010, filed 1/17/86. Statutory Authority: RCW 39.12.015, 39.12.060 and HB 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-010, filed 8/27/82.]

**WAC 296-127-040 Statement of intent to pay prevailing wages.** (1) All statements of intent to pay prevailing wages submitted to the industrial statistician of the department shall be accompanied by a fee of twenty-five dollars for each statement. Fees shall be made payable to the department of labor and industries.

(2) Any agency, division, or department of the state of Washington which through agreement with the department certifies statements of intent for its own contracts shall provide to the industrial statistician each month the number of statements of intent certified and quarterly shall send a fee of twenty dollars for each statement of intent to pay prevailing wages it has certified. This fee shall be sent to the industrial statistician and be made payable to the department of labor and industries.

[Statutory Authority: RCW 39.12.070. 94-01-100, § 296-127-040, filed 12/16/93, effective 1/16/94. Statutory Authority: RCW 43.22.270. 90-24-053, § 296-127-040, filed 12/3/90, effective 1/3/91. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 88-22-046 (Order 88-22), § 296-127-040, filed 10/31/88. Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-040, filed 8/27/82.]

**WAC 296-127-045 Affidavit of wages paid.** (1) All affidavits of wages paid submitted to the industrial statistician of the department shall be accompanied by a fee of twenty-five dollars for each affidavit of wages paid. All fees shall be made payable to the department of labor and industries.

(2) Any agency, division, or department of the state of Washington which through agreement with the department certifies affidavits of wages paid for its own contracts shall provide to the industrial statistician each month the number of affidavit of wages paid it has certified and quarterly shall send a fee of twenty dollars for each affidavit of wages paid it has certified. This fee shall be sent to the industrial statistician and be made payable to the department of labor and industries.

[Statutory Authority: RCW 39.12.070. 94-01-100, § 296-127-045, filed 12/16/93, effective 1/16/94. Statutory Authority: RCW 43.22.270. 90-24-053, § 296-127-045, filed 12/3/90, effective 1/3/91. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 88-22-046 (Order 88-22), § 296-127-045, filed 10/31/88. Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-045, filed 8/27/82.]

## Chapter 296-155 WAC
## SAFETY STANDARDS FOR CONSTRUCTION WORK

WAC

## WAC 296-155-173 Methylenedianiline.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-173, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17301 Scope and application.** (1) This section applies to all construction work as defined in WAC 296-155-005, in which there is exposure to MDA, including but not limited to the following:

(a) Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain MDA;

(b) Installation or the finishing of surfaces with products containing MDA;

(c) MDA spill/emergency cleanup at construction sites; and

(d) Transportation, disposal, storage, or containment of MDA or products containing MDA on the site or location at which construction activities are performed.

(2) Except as provided in subsection (7) of this section and WAC 296-155-17311(5), this standard does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(3) Except as provided in subsection (7) of this section, this standard does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(4) Except as provided in subsection (7) of this section, this standard does not apply to the storage, transportation, distribution, or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids, except for the provisions of WAC 296-62-054 and 296-155-17309.

(5) Except as provided in subsection (7) of this section, this standard does not apply to materials in any form which contain less than 0.1% MDA by weight or volume.

(6) Except as provided in subsection (7) of this section, this standard does not apply to "finished articles containing MDA."

(7) Where products containing MDA are exempted under subsections (2) and (6) of this section, the employer shall maintain records of the initial monitoring results or objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in the recordkeeping provision of WAC 296-155-17331.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17301, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17303 Definitions.** For the purpose of this standard, the following definitions shall apply:

(1) "Action level" means a concentration of airborne MDA of 5 ppb as an 8-hour time-weighted average.

(2) "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 WAC 296-155-17333, or any other person authorized by the act or regulations issued under the act.

(3) "Container" means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, commercial packaging, or the like, but does not include piping systems.

(4) "Decontamination area" means an area outside of, but as near as practical to, the regulated area, consisting of an equipment storage area, wash area, and clean change area, which is used for the decontamination of workers, materials, and equipment contaminated with MDA.

(5) "Dermal exposure to MDA" occurs where employees are engaged in the handling, application, or use of mixtures or materials containing MDA, with any of the following nonairborne forms of MDA:

(a) Liquid, powdered, granular, or flaked mixtures containing MDA in concentrations greater than 0.1% by weight or volume; and

(b) Materials other than "finished articles" containing MDA in concentrations greater than 0.1% by weight or volume.

(6) "Director" means the director of the department of labor and industries.

(7) "Emergency" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which results in an unexpected and potentially hazardous release of MDA.

(8) "Employee exposure" means exposure to MDA which would occur if the employee were not using respirators or protective work clothing and equipment.

(9) "Finished article containing MDA" is defined as a manufactured item:

(a) Which is formed to a specific shape or design during manufacture;

(b) Which has end use function(s) dependent in whole or part upon its shape or design during end use; and

(c) Where applicable, is an item which is fully cured by virtue of having been subjected to the conditions (temperature, time) necessary to complete the desired chemical reaction.

(10) "Historical monitoring data" means monitoring data for construction jobs that meet the following conditions:

(a) The data upon which judgments are based are scientifically sound and were collected using methods that are sufficiently accurate and precise;

(b) The processes and work practices that were in use when the historical monitoring data were obtained are essentially the same as those to be used during the job for which initial monitoring will not be performed;

(c) The characteristics of the MDA-containing material being handled when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed;

(d) Environmental conditions prevailing when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed; and

(e) Other data relevant to the operations, materials, processing, or employee exposures covered by the exception are substantially similar. The data must be scientifically sound, the characteristics of the MDA containing material must be similar, and the environmental conditions comparable.

(11) "4,4' methylenedianiline" or "MDA" means the chemical 4,4'-diaminodiphenylmethane, Chemical Abstract Service Registry Number 101-77-9, in the form of a vapor, liquid, or solid. The definition also includes the salts of MDA.

(12) "Regulated areas" means areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits, or where "dermal exposure to MDA" can occur.

(13) "STEL" means short-term exposure limit as determined by any 15-minute sample period.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17303, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17305 Permissible exposure limits.** The employer shall assure that no employee is exposed to an airborne concentration of MDA in excess of ten parts per billion (10 ppb) as an 8-hour time-weighted average and a STEL of one hundred parts per billion (100 ppb).

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17305, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17307 Communication among employers.** On multi-employer worksites, an employer performing work involving the application of MDA or materials containing MDA for which establishment of one or more regulated areas is required shall inform other employers on the site of the nature of the employer's work with MDA and of the existence of, and requirements pertaining to, regulated areas.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17307, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17309 Emergency situations.** (1) Written plan.

(a) A written plan for emergency situations shall be developed for each construction operation where there is a possibility of an emergency. The plan shall include procedures where the employer identifies emergency escape routes for her or his employees at each construction site before the construction operation begins. 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 the appropriate personal protective equipment and clothing as required in WAC 296-155-17317 and 296-155-17319 until the emergency is abated.

(c) The plan shall specifically include provisions for alerting and evacuating affected employees as well as the applicable 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 MDA due to an emergency, means shall be developed to promptly alert employees who have the potential to be directly exposed. Affected employees not engaged in correcting emergency conditions shall be evacuated immediately in the event that an emergency occurs. Means shall also be developed for alerting other employees who may be exposed as a result of the emergency.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17309, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17311 Exposure monitoring.** (1) General.

(a) Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's exposure to airborne MDA over an 8-hour period. Determination of employee exposure to the STEL shall be made from breathing zone air samples collected over a 15 minute sampling period.

(b) Representative employee exposure shall be determined on the basis of one or more samples representing full shift exposure for each shift for each job classification in each work area where exposure to MDA may occur.

(c) Where the employer can document that exposure levels are equivalent for similar operations in different work shifts, the employer shall only be required to determine representative employee exposure for that operation during one shift.

(2) Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall perform initial monitoring to determine accurately the airborne concentrations of MDA to which employees may be exposed unless:

(a) The employer can demonstrate, on the basis of objective data, that the MDA-containing product or material being handled cannot cause exposures above the standard's action level, even under worst-case release conditions; or

(b) The employer has historical monitoring or other data demonstrating that exposures on a particular job will be below the action level.

(3) Periodic monitoring and monitoring frequency.

(a) If the monitoring required by subsection (2)(b) of this section reveals employee exposure at or above the action level, but at or below the PELs, the employer shall repeat such monitoring for each such employee at least every 6 months.

(b) If the monitoring required by subsection (2)(b) of this section reveals employee exposure above the PELs, the employer shall repeat such monitoring for each such employee at least every 3 months.

(c) Employers who are conducting MDA operations within a regulated area can forego periodic monitoring if the employees are all wearing supplied-air respirators while working in the regulated area.

(d) The employer may alter the monitoring schedule from every three months to every six months for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to below the PELs but above the action level.

(4) Termination of monitoring.

(a) If the initial monitoring required by subsection (2)(b) of this section reveals employee exposure to be below the action level, the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(b) If the periodic monitoring required by subsection (3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(5) Additional monitoring. The employer shall institute the exposure monitoring required under subsections (2)(b) and (c) of this section when there has been a change in production process, chemicals present, control equipment, personnel, or work practices which may result in new or additional exposures to MDA, or when the employer has any reason to suspect a change which may result in new or additional exposures.

(6) Accuracy of monitoring. Monitoring shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of MDA.

(7) Employee notification of monitoring results.

(a) The employer shall, within 15 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.

(b) The written notification required by subdivision (a) of this subsection shall contain the corrective action being taken by the employer or any other protective measures which have been implemented to reduce the employee exposure to or below the PELs, wherever the PELs are exceeded.

(8) Visual monitoring. The employer shall make routine inspections of employee hands, face, and forearms potentially exposed to MDA. Other potential dermal exposures reported by the employee must be referred to the appropriate medical personnel for observation. If the employer determines that the employee has been exposed to MDA the employer shall:

(a) Determine the source of exposure;

(b) Implement protective measures to correct the hazard; and

(c) Maintain records of the corrective actions in accordance with WAC 296-155-17327.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17311, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17313 Regulated areas.** (1) Establishment.

(a) Airborne exposures. The employer shall establish regulated areas where airborne concentrations of MDA exceed, or can reasonably be expected to exceed, the permissible exposure limits.

(b) Dermal exposures. Where employees are subject to "dermal exposure to MDA" the employer shall establish those work areas as regulated areas.

(2) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.

(3) Access. Access to regulated areas shall be limited to authorized persons.

(4) Personal protective equipment and clothing. Each person entering a regulated area shall be supplied with, and required to use, the appropriate personal protective clothing and equipment in accordance with WAC 296-155-17317 and 296-155-17319.

(5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17313, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17315 Methods of compliance.** (1) Engineering controls and work practices and respirators.

(a) The employer shall use one or any combination of the following control methods to achieve compliance with the permissible exposure limits prescribed by WAC 296-155-17317.

(i) Local exhaust ventilation equipped with HEPA filter dust collection systems;

(ii) General ventilation systems;

(iii) Use of work practices; or

(iv) Other engineering controls such as isolation and enclosure that the director can show to be 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 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 protective devices which comply with the requirements of WAC 296-155-17317.

(2) Special provisions. For workers engaged in spray application methods, respiratory protection must be used in addition to feasible engineering controls and work practices to reduce employee exposure to or below the PELs.

(3) Prohibitions. Compressed air shall not be used to remove MDA unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.

(4) Employee rotation. The employer shall not use employee rotation as a means of compliance with the exposure limits prescribed in WAC 296-155-17305.

(5) Compliance program.

(a) The employer shall establish and implement a written program to reduce employee exposure to or below the PELs by means of engineering and work practice controls, as required by subsection (1) of this section, and by use of respiratory protection where permitted under this section.

(b) Upon request this written program shall be furnished for examination and copying to the director, affected employees, and designated employee representatives. The employer shall review and, as necessary, update such plans at least once every 12 months to make certain they reflect the current status of the program.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17315, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17317 Respiratory protection.** (1) General. The employer shall provide respirators, and ensure that they are used, where required by this section. Respirators shall be used in the following circumstances:

(a) During the time period necessary to install or implement feasible engineering and work practice controls;

(b) In work operations such as maintenance and repair activities and spray application processes for which engineering and work practice controls are not feasible;

(c) In work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the PELs; and

(d) In emergencies.

(2) Respirator selection.

(a) Where respirators are required or allowed under this section, the employer shall select and provide, at no cost to the employee, the appropriate respirator as specified in Table 1, and shall assure that the employee uses the respirator provided.

(b) The employer shall select respirators from among those jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health under the provisions of 30 CFR part 11 and chapter 296-62 WAC, Part E.

(c) Any employee who cannot wear a negative-pressure respirator shall be given the option of wearing a positive-pressure respirator or any supplied-air respirator operated in the continuous flow or pressure demand mode.

(3) Respirator program. The employer shall institute a respiratory protection program in accordance with chapter 296-62 WAC, Part E.

(4) Respirator use.

(a) Where air-purifying respirators (cartridge or canister) are used, the employer shall replace the air-purifying element as needed to maintain the effectiveness of the respirator. The employer shall ensure that each cartridge is dated at the beginning of use.

(b) Employees who wear respirators shall be allowed to leave the regulated area to readjust the face piece or to wash their faces and to wipe clean the face pieces on their respirators in order to minimize potential skin irritation associated with respirator use.

(c) 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;<br>(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]<br>(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 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.

(5) Respirator fit testing.

(a) The employer shall perform and record the results of either quantitative or qualitative fit tests at the time of initial fitting and at least annually thereafter for each employee wearing a negative-pressure respirator. The test shall be used to select a respirator facepiece which provides the required protection as prescribed in subsection (4)(c) of this section, Table 1.

(b) The employer shall follow the test protocols outlined in Appendix E of this standard for whichever type of fit testing the employer chooses.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17317, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17319 Protective work clothing and equipment.** (1) Provision and use. Where employees are subject to dermal exposure to MDA, where liquids containing MDA can be splashed into the eyes, or where airborne concentrations of MDA are in excess of the PEL, the employer shall provide, at no cost to the employee, and ensure that the employee uses, appropriate protective work clothing and equipment which prevent contact with MDA such as, but not limited to:

(a) Aprons, coveralls, or other full-body work clothing;

(b) Gloves, head coverings, and foot coverings; and

(c) Face shields, chemical goggles; or

(d) Other appropriate protective equipment which comply with WAC 296-24-078.

(2) Removal and storage.

(a) The employer shall ensure that, at the end of their work shift, employees remove MDA-contaminated protective work clothing and equipment that is not routinely removed throughout the day in change areas provided in accordance with the provisions in WAC 296-155-17321.

(b) The employer shall ensure that, during their work shift, employees remove all other MDA-contaminated protective work clothing or equipment before leaving a regulated area.

(c) The employer shall ensure that no employee takes MDA-contaminated work clothing or equipment out of the decontamination areas, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(d) MDA-contaminated work clothing or equipment shall be placed and stored and transported in sealed, impermeable bags, or other closed impermeable containers.

(e) Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of decontamination areas or the workplace for cleaning, maintenance, or disposal, shall bear labels warning of the hazards of MDA.

(3) Cleaning and replacement.

(a) The employer shall provide the employee with clean protective clothing and equipment. The employer shall ensure that protective work clothing or equipment required by this section is cleaned, laundered, repaired, or replaced at intervals appropriate to maintain its effectiveness.

(b) The employer shall prohibit the removal of MDA from protective work clothing or equipment by blowing, shaking, or any methods which allow MDA to reenter the workplace.

(c) The employer shall ensure that laundering of MDA-contaminated clothing shall be done so as to prevent the release of MDA in the workplace.

(d) Any employer who gives MDA-contaminated clothing to another person for laundering shall inform such person of the requirement to prevent the release of MDA.

(e) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with MDA of the potentially harmful effects of exposure.

(4) Visual examination.

(a) The employer shall ensure that employees' work clothing is examined periodically for rips or tears that may occur during performance of work.

(b) When rips or tears are detected, the protective equipment or clothing shall be repaired and replaced immediately.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17319, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17321 Hygiene facilities and practices.** (1) General.

(a) The employer shall provide decontamination areas for employees required to work in regulated areas or required by WAC 296-155-17319 to wear protective clothing. Exception: In lieu of the decontamination area requirement specified in this subsection, the employer may permit employees engaged in small scale, short duration operations, to clean their protective clothing or dispose of the protective clothing before such employees leave the area where the work was performed.

(b) Change areas. The employer shall ensure that change areas are equipped with separate storage facilities for protective clothing and street clothing, in accordance with WAC 296-24-12011.

(c) Equipment area. The equipment area shall be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective clothing and equipment.

(2) Shower area.

(a) Where feasible, shower facilities shall be provided which comply with WAC 296-24-12009(3) wherever the possibility of employee exposure to airborne levels of MDA in excess of the permissible exposure limit exists.

(b) Where dermal exposure to MDA occurs, the employer shall ensure that materials spilled or deposited on the skin are removed as soon as possible by methods which do not facilitate the dermal absorption of MDA.

(3) Lunch areas.

(a) Whenever food or beverages are consumed at the worksite and employees are exposed to MDA the employer shall provide clean lunch areas were MDA levels are below the action level and where no dermal exposure to MDA can occur.

(b) The employer shall ensure that employees wash their hands and faces with soap and water prior to eating, drinking, smoking, or applying cosmetics.

(c) The employer shall ensure that employees do not enter lunch facilities with contaminated protective work clothing or equipment.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17321, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17323 Communication of hazards to employees.** (1) Signs and labels.

(a) The employer shall post and maintain legible signs demarcating regulated areas and entrances or accessways to regulated areas that bear the following legend:

DANGER MDA MAY CAUSE CANCER LIVER TOXIN
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
MAY BE REQUIRED TO BE WORN IN THIS AREA

(b) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of MDA within the workplace. The labels shall comply with the requirements of WAC 296-62-05411 and shall include one of the following legends:

(i) For pure MDA

DANGER CONTAINS MDA MAY CAUSE CANCER LIVER TOXIN

(ii) For mixtures containing MDA

DANGER CONTAINS MDA CONTAINS MATERIALS
WHICH MAY CAUSE CANCER LIVER TOXIN

(2) Material safety data sheets (MSDS). Employers shall obtain or develop, and shall provide access to their employees to, a material safety data sheet (MSDS) for MDA.

(3) Information and training.

(a) The employer shall provide employees with information and training on MDA, in accordance with WAC 296-62-054 through 296-62-05415, at the time of initial assignment and at least annually thereafter.

(b) In addition to the information required under WAC 296-62-054, the employer shall:

(i) Provide an explanation of the contents of this section, including Appendices A and B of this section, and indicate to employees where a copy of the standard is available;

(ii) Describe the medical surveillance program required under WAC 296-155-17327, and explain the information contained in Appendix C of this standard; and

(iii) Describe the medical removal provision required under WAC 296-155-17327.

(4) Access to training materials.

(a) The employer shall make readily available to all affected employees, without cost, all written materials relating to the employee training program, including a copy of this regulation.

(b) The employer shall provide to the director, upon request, all information and training materials relating to the employee information and training program.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17323, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17325 Housekeeping.** (1) All surfaces shall be maintained as free as practicable of visible accumulations of MDA.

(2) The employer shall institute a program for detecting MDA leaks, spills, and discharges, including regular visual inspections of operations involving liquid or solid MDA.

(3) All leaks shall be repaired and liquid or dust spills cleaned up promptly.

(4) Surfaces contaminated with MDA may not be cleaned by the use of compressed air.

(5) Shoveling, dry sweeping, and other methods of dry clean-up of MDA may be used where HEPA-filtered vacuuming and/or wet cleaning are not feasible or practical.

(6) Waste, scrap, debris, bags, containers, equipment, and clothing contaminated with MDA shall be collected and disposed of in a manner to prevent the reentry of MDA into the workplace.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17325, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17327 Medical surveillance.** (1) General.

(a) The employer shall make available a medical surveillance program for employees exposed to MDA under the following circumstances:

(i) Employees exposed at or above the action level for 30 or more days per year;

(ii) Employees who are subject to dermal exposure to MDA for 15 or more days per year;

(iii) Employees who have been exposed in an emergency situation;

(iv) Employees whom the employer, based on results from compliance with WAC 296-155-17311(8) has reason to believe are being dermally exposed; and

(v) Employees who show signs or symptoms of MDA exposure.

(b) The employer shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician at a reasonable time and place, and provided without cost to the employee.

(2) Initial examinations.

(a) Within 150 days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by subsection (1)(a) of this section with a medical examination including the following elements:

A detailed history which includes:

(i) Past work exposure to MDA or any other toxic substances;

(ii) A history of drugs, alcohol, tobacco, and medication routinely taken (duration and quantity); and

(iii) A history of dermatitis, chemical skin sensitization, or previous hepatic disease.

(iv) A physical examination which includes all routine physical examination parameters, skin examination, and examination for signs of liver disease.

(v) Laboratory tests including:

(A) Liver function tests; and

(B) Urinalysis.

(vi) Additional tests as necessary in the opinion of the physician.

(b) No initial medical examination is required if adequate records show that the employee has been examined in accordance with the requirements of this section within the previous six months prior to the effective date of this standard or prior to the date of initial assignment.

(3) Periodic examinations.

(a) The employer shall provide each employee covered by this section with a medical examination at least annually

following the initial examination. These periodic examinations shall include at least the following elements:

(i) A brief history regarding any new exposure to potential liver toxins, changes in drug, tobacco, and alcohol intake, and the appearance of physical signs relating to the liver and the skin;

(ii) The appropriate tests and examinations including liver function tests and skin examinations; and

(iii) Appropriate additional tests or examinations as deemed necessary by the physician.

(b) If in the physician's opinion the results of liver function tests indicate an abnormality, the employee shall be removed from further MDA exposure in accordance with WAC 296-155-17329. Repeat liver function tests shall be conducted on advice of the physician.

(4) Emergency examinations. If the employer determines that the employee has been exposed to a potentially hazardous amount of MDA in an emergency situation under WAC 296-155-17309, the employer shall provide medical examinations in accordance with subsection (3)(a) and (b). If the results of liver function testing indicate an abnormality, the employee shall be removed in accordance with WAC 296-155-17329. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and on the advice of the physician, no additional testing is required.

(5) Additional examinations. Where the employee develops signs and symptoms associated with exposure to MDA, the employer shall provide the employee with an additional medical examination including liver function tests. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and on the advice of the physician, no additional testing is required.

(6) 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, and the employee has signs or symptoms of occupational exposure to MDA (which could include an abnormal liver function test), and the employee disagrees with the opinion of the examining physician, and this opinion could affect the employee's job status, the employee may designate an appropriate and mutually acceptable 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 15 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 second physician, unless the employer and the employee reach a mutually acceptable agreement.

(f) Information provided to the examining physician.

(i) The employer shall provide the following information to the examining physician:

(A) A copy of this regulation and its appendices;

(B) A description of the affected employee's duties as they relate to the employee's potential exposure to MDA;

(C) The employee's current actual or representative MDA exposure level;

(D) A description of any personal protective equipment used or to be used; and

(E) Information from previous employment related medical examinations of the affected employee.

(ii) The employer shall provide the foregoing information to a second physician under this section upon request either by the second physician, or by the employee.

(g) Physician's written opinion.

(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 15 days of its receipt. The written opinion shall include the following:

(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 at increased risk of material impairment of health from exposure to MDA;

(C) The physician's recommended limitations upon the employee's exposure to MDA or upon the employee's use of protective clothing or equipment and 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 resulting from MDA exposure which require further explanation or treatment.

(ii) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17327, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17329 Medical removal.** (1) Temporary medical removal of an employee.

(a) Temporary removal resulting from occupational exposure. The employee shall be removed from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur, following an initial examination (WAC 296-155-17327(2)), periodic examinations (WAC 296-155-17327(3)), an emergency situation (WAC 296-155-17327(4)), or an additional examination (WAC 296-155-17327(5)) in the following circumstances:

(i) When the employee exhibits signs and/or symptoms indicative of acute exposure to MDA; or

(ii) When the examining physician determines that an employee's abnormal liver function tests are not associated with MDA exposure but that the abnormalities may be exacerbated as a result of occupational exposure to MDA.

(b) Temporary removal due to a final medical determination.

(i) The employer shall remove an employee from work having an exposure to MDA at or above the action level or where the potential for dermal exposure exists 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 MDA.

(ii) For the purposes of this section, the phrase "final medical determination" shall mean the outcome of the physician review mechanism used pursuant to the medical surveillance provisions of this section.

(iii) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to MDA, the employer shall implement and act consistent with the recommendation.

(2) Return of the employee to former job status.

(a) The employer shall return an employee to her or his former job status:

(i) When the employee no longer shows signs or symptoms of exposure to MDA, or upon the advice of the physician.

(ii) 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 MDA.

(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.

(3) 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.

(4) Employer options pending a final medical determination. Where the physician review 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 MDA, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of the physician who has reviewed the employee's health status.

(b) Return. The employer may return the employee to her or his former job status, and end any special protective measures provided to 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:

(i) If 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 six months as a result of exposure to MDA, then the employer shall await a final medical determination.

(5) Medical removal protection benefits.

(a) Provisions of medical removal protection benefits. The employer shall provide to an employee up to six months of medical removal protection benefits on each occasion that an employee is removed from exposure to MDA or otherwise limited pursuant to this section.

(b) 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 MDA or otherwise limited.

(c) Follow-up medical surveillance during the period of employee removal or limitations. During the period of time that an employee is removed from normal exposure to MDA 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.

(d) Workers' compensation claims. If a removed employee files a claim for workers' compensation payments for an MDA-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.

(e) 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 any

employer made possible by virtue of the employee's removal.

(f) Employees who do not recover within the 6 months of removal. The employer shall take the following measures with respect to any employee removed from exposure to MDA:

(i) 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;

(ii) The employer shall assure that the final medical determination obtained indicates whether or not the employee may be returned to her or his former job status, and, if not, what steps should be taken to protect the employee's health;

(iii) Where the final medical determination has not yet been obtained, or once obtained indicates that the employee may not yet be returned to her or his 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 her or his former job status; and

(iv) Where the employer acts pursuant to a final medical determination which permits the return of the employee to her or his former job status despite what would otherwise be an unacceptable liver function test, 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 MDA removal criteria provided by this section.

(6) 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 MDA or otherwise places limitations on an employee due to the effects of MDA exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by subsection (5) of this section.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17329, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17331 Recordkeeping.** (1) Objective data for exempted operations.

(a) Where the employer has relied on objective data that demonstrate that products made from or containing MDA are not capable of releasing MDA or do not present a dermal exposure problem under the expected conditions of processing, use, or handling to exempt such operations from the initial monitoring requirements under WAC 296-155-17311(2), the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.

(b) The record shall include at least the following information:

(i) The product qualifying for exemption;

(ii) The source of the objective data;

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of MDA;

(iv) A description of the operation exempted and how the data support the exemption; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(2) Historical monitoring data.

(a) Where the employer has relied on historical monitoring data that demonstrate that exposures on a particular job will be below the action level to exempt such operations from the initial monitoring requirements under WAC 296-155-17311(2), the employer shall establish and maintain an accurate record of historical monitoring data reasonably relied upon in support of the exception.

(b) The record shall include information that reflect the following conditions:

(i) The data upon which judgments are based are scientifically sound and were collected using methods that are sufficiently accurate and precise;

(ii) The processes and work practices that were in use when the historical monitoring data were obtained are essentially the same as those to be used during the job for which initial monitoring will not be performed;

(iii) The characteristics of the MDA-containing material being handled when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed;

(iv) Environmental conditions prevailing when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exception.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such historical monitoring data.

(3) The employer may utilize the services of competent organizations such as industry trade associations and employee associations to maintain the records required by this section.

(4) Exposure measurements.

(a) The employer shall keep an accurate record of all measurements taken to monitor employee exposure to MDA.

(b) This record shall include at least the following information:

(i) The date of measurement;

(ii) The operation involving exposure to MDA;

(iii) Sampling and analytical methods used and evidence of their accuracy;

(iv) Number, duration, and results of samples taken;

(v) Type of protective devices worn, if any; and

(vi) Name, Social Security number, and exposure of the employees whose exposures are represented.

(c) The employer shall maintain this record for at least thirty years in accordance with chapter 296-62 WAC, Part B.

(5) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance by WAC 296-155-17327 in accordance with chapter 296-62 WAC, Part B.

(b) The record shall include at least the following information:

(i) The name and Social Security number of the employee;

(ii) A copy of the employee's medical examination results, including the medical history, questionnaire responses, results of any tests, and physician's recommendations;

(iii) Physician's written opinions;

(iv) Any employee medical complaints related to exposure to MDA; and

(v) A copy of the information provided to the physician as required by WAC 296-155-17327.

(c) The employer shall ensure that this record is maintained for the duration of employment plus thirty years in accordance with chapter 296-62 WAC, Part B.

(d) A copy of the employee's medical removal and return to work status.

(6) Training records. The employer shall maintain all employee training records for one year beyond the last date of employment.

(7) Availability.

(a) The employer, upon written request, shall make all records required to be maintained by this section available to the assistant secretary and the director for examination and copying.

(b) The employer, upon request, shall make any exposure records required by WAC 296-155-17311 and 296-155-17327 available for examination and copying to affected employees, former employees, designated representatives, and the director, in accordance with WAC 296-62-05201 through 296-62-05209 and 296-62-05213 through 296-62-05223.

(c) The employer, upon request, shall make employee medical records required by WAC 296-155-17327 and this section available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the director in accordance with chapter 296-62 WAC, Part B.

(8) Transfer of records.

(a) The employer shall comply with the requirements concerning transfer of records set forth in WAC 296-62-05215.

(b) Whenever 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 90 days prior to disposal and, upon request, transmit them to the director.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17331, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17333 Observation of monitoring.** (1) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe the measuring or monitoring of employee exposure to MDA conducted pursuant to WAC 296-155-17311.

(2) Observation procedures. When observation of the measuring or monitoring of employee exposure to MDA 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.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17333, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17335 Effective date.** This standard shall become effective on March 15, 1993.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17335, filed 2/3/93, effective 3/15/93.]

**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. The protocols for respiratory fit testing in Appendix E of this standard are mandatory.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17337, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17339 Startup dates.** Compliance with all obligations of this standard commence March 3, 1993, except as follows:

(1) Initial monitoring under WAC 296-155-17311(2) shall be completed as soon as possible but no later than June 3, 1993.

(2) Medical examinations under WAC 296-155-17327, shall be completed as soon as possible but no later than August 14, 1993.

(3) Emergency plans required by WAC 296-155-17309 shall be provided and available for inspection and copying as soon as possible but no later than July 13, 1993.

(4) Initial training and education shall be completed as soon as possible but no later than July 13, 1993.

(5) Decontamination and lunch areas under WAC 296-155-17321 shall be in operation as soon as possible but no later than March 3, 1993.

(6) Respiratory protection required by WAC 296-155-17317 shall be provided as soon as possible but no later than July 13, 1993.

(7) Written compliance plans required by WAC 296-155-17315(5) shall be completed and available for inspection and copying as soon as possible but no later than July 13, 1993.

(8) WISHA shall enforce the permissible exposure limits in WAC 296-155-17305 no earlier than July 13, 1993.

(9) Engineering controls needed to achieve the PELs must be in place March 3, 1993.

(10) Personal protective clothing required by WAC 296-155-17317 shall be available July 13, 1993.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17339, 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 have the joint Mine Safety and Health Administration and National Institute for Occupational Safety and Health (NIOSH) seal of approval, 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: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17341, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17343 Appendix B to WAC 296-155-173—Substance technical guidelines, MDA.** (1) Identification.

(a) Substance identification.

(i) Synonyms: CAS No. 101-77-9. 4,4'-methylenedianiline; 4,4'-methylenebisaniline; methylenedianiline; dianilinomethane.

(ii) Formula: $C_{13}H_{14}N_2$.

(b) Physical data.

(2) Appearance and odor: White to tan solid; amine odor.

(a) Molecular weight: 198.26.

(b) Boiling point: 398-399 degrees C. at 760 mm Hg.

(c) Melting point: 88-93 degrees C. (190-100 degrees F.).

(d) Vapor pressure: 9 mm Hg at 232 degrees C.

(e) Evaporation rate (n-butyl acetate=1): Negligible.

(f) Vapor density (Air=1): Not applicable.

(g) Volatile fraction by weight: Negligible.

(h) Specific gravity (Water=1): Slight.

(i) Heat of combustion: -8.40 kcal/g.

(j) Solubility in water: Slightly soluble in cold water, very soluble in alcohol, benzene, ether, and many organic solvents.

(3) Fire, explosion, and reactivity hazard data.

(a) Flash point: 190 degrees C. (374 degrees F.) Setaflash closed cup.

(b) Flash point: 226 degrees C. (439 degrees F.) Cleveland open cup.

(c) Extinguishing media: Water spray; dry chemical; carbon dioxide.

(d) Special fire fighting procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

(e) Unusual fire and explosion hazards: Fire or excessive heat may cause production of hazardous decomposition products.

(4) Reactivity data.

(a) Stability: Stable.

(b) Incompatibility: Strong oxidizers.

(c) Hazardous decomposition products: As with any other organic material, combustion may produce carbon monoxide. Oxides of nitrogen may also be present.

(d) Hazardous polymerization: Will not occur.

(5) Spill and leak procedures.

(a) Sweep material onto paper and place in fiber carton.

(b) Package appropriately for safe feed to an incinerator or dissolve in compatible waste solvents prior to incineration.

(c) Dispose of in an approved incinerator equipped with afterburner and scrubber or contract with licensed chemical waste disposal service.

(d) Discharge treatment or disposal may be subject to federal, state, or local laws.

(e) Wear appropriate personal protective equipment.

(6) Special storage and handling precautions.

(a) High exposure to MDA can occur when transferring the substance from one container to another. Such operations should be well ventilated and good work practices must be established to avoid spills.

(b) Pure MDA is a solid with a low vapor pressure. Grinding or heating operations increase the potential for exposure.

(c) Store away from oxidizing materials.

(d) Employers shall advise employees of all areas and operations where exposure to MDA could occur.

(7) Housekeeping and hygiene facilities.

(a) The workplace should be kept clean, orderly, and in a sanitary condition. The employer should institute a leak and spill detection program for operations involving MDA in order to detect sources of fugitive MDA emissions.

(b) Adequate washing facilities with hot and cold water are to be provided and maintained in a sanitary condition. Suitable cleansing agents should also be provided to assure the effective removal of MDA from the skin.

(8) Common operations. Common operations in which exposure to MDA is likely to occur include the following: Manufacture of MDA; manufacture of methylene diisocyanate; curing agent for epoxy resin structures; wire coating operations; and filament winding.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17343, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17345 Appendix C to WAC 296-155-173—Medical surveillance guidelines for MDA.** (1) Route of entry. Inhalation; skin absorption; ingestion. MDA can be inhaled, absorbed through the skin, or ingested.

(2) Toxicology. MDA is a suspect carcinogen in humans. There are several reports of liver disease in humans and animals resulting from acute exposure to MDA. A well documented case of an acute cardiomyopathy secondary to exposure to MDA is on record. Numerous human cases of hepatitis secondary to MDA are known. Upon direct contact MDA may also cause damage to the eyes. Dermatitis and skin sensitization have been observed. Almost all forms of acute environmental hepatic injury in humans involve the hepatic parenchyma and produce hepatocellular jaundice. This agent produces intrahepatic cholestasis. The clinical picture consists of cholestatic jaundice, preceded or accompanied by abdominal pain, fever, and chills. Onset in about 60% of all observed cases is abrupt with severe abdominal pain. In about 30% of observed cases, the illness presented and evolved more slowly and less dramatically, with only slight abdominal pain. In about 10% of the cases only jaundice was evident. The cholestatic nature of the jaundice is evident in the prominence of itching, the histologic predominance of bile stasis, and portal inflammatory infiltration, accompanied by only slight parenchymal injury in most cases, and by the moderately elevated transaminase values. Acute, high doses, however, have been known to cause hepatocellular damage resulting in elevated SGPT, SGOT, alkaline phosphatase, and bilirubin. Absorption through the skin is rapid. MDA is metabolized and excreted over a 48-hour period. Direct contact may be irritating to the skin, causing dermatitis. Also MDA which is deposited on the skin is not thoroughly removed through washing. MDA may cause bladder cancer in humans. Animal data supporting this assumption is not available nor is conclusive human data. However, human data collected on workers at a helicopter manufacturing facility where MDA is used suggests a higher incidence of bladder cancer among exposed workers.

(3) Signs and symptoms. Skin may become yellow from contact with MDA. Repeated or prolonged contact

with MDA may result in recurring dermatitis (red-itchy, cracked skin) and eye irritation. Inhalation, ingestion, or absorption through the skin at high concentrations may result in hepatitis, causing symptoms such as fever and chills, nausea and vomiting, dark urine, anorexia, rash, right upper quadrant pain, and jaundice. Corneal burns may occur when MDA is splashed in the eyes.

(4) Treatment of acute toxic effects/emergency situation. If MDA gets into the eyes, immediately wash eyes with large amounts of water. If MDA is splashed on the skin, immediately wash contaminated skin with mild soap or detergent. Employee should be removed from exposure and given proper medical treatment. Medical tests required under the emergency section of the medical surveillance (WAC 296-155-17327(4)) must be conducted. If the chemical is swallowed do not induce vomiting but remove by gastric lavage.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17345, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17347 Appendix D to WAC 296-155-173—Sampling and analytical methods for MDA monitoring and measurement procedures.** Measurements taken for the purpose of determining employee exposure to MDA are best taken so that the representative average 8-hour exposure may be determined from a single 8-hour sample or two 4-hour samples. Short-time interval samples (or grab samples) may also be used to determine average exposure level if a minimum of five measurements are taken in a random manner over the 8-hour work shift. Random sampling means that any portion of the work shift has the same chance of being sampled as any other. The arithmetic average of all such random samples taken on one work shift is an estimate of an employee's average level of exposure for that work shift. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee). There are a number of methods available for monitoring employee exposures to MDA. The method OSHA currently uses is included below. The employer however has the obligation of selecting any monitoring method which meets the accuracy and precision requirements of the standard under her or his unique field conditions. The standard requires that the method of monitoring must have an accuracy, to a 95 percent confidence level, of not less than plus or minus 25 percent for the select PEL.

WISHA methodology.

Sampling procedure.

Apparatus:

Samples are collected by use of a personal sampling pump that can be calibrated within +/-5% of the recommended flow rate with the sampling filter in line. Samples are collected on 37 mm Gelman type A/E glass fiber filters treated with sulfuric acid. The filters are prepared by soaking each filter with 0.5 mL of 0.26N $H_2SO_4$. (0.26 N $H_2SO_4$ can be prepared by diluting 1.5 mL of 36N $H_2SO_4$ to 200 mL with deionized water.) The filters are dried in an oven at 100 degrees C. for one hour and then assembled into three-piece 37 mm polystyrene cassettes without backup pads. The front filter is separated from the back filter by a polystyrene spacer. The cassettes are sealed with shrink bands and the ends are plugged with plastic plugs. After sampling, the filters are carefully removed from the cassettes and individually transferred to small vials containing approximately 2 mL deionized water. The vials must be tightly sealed. The water can be added before or after the filters are transferred. The vials must be sealable and capable of holding at least 7 mL of liquid. Small glass scintillation vials with caps containing Teflon liners are recommended.

Reagents:

Deionized water is needed for addition to the vials.

Sampling technique:

Immediately before sampling, remove the plastic plugs from the filter cassettes. Attach the cassette to the sampling pump with flexible tubing and place the cassette in the employee's breathing zone. After sampling, seal the cassettes with plastic plugs until the filters are transferred to the vials containing deionized water. At some convenient time within 10 hours of sampling, transfer the sample filters to vials. Seal the small vials lengthwise. Submit at least one blank filter with each sample set. Blanks should be handled in the same manner as samples, but no air is drawn through them. Record sample volumes (in L of air) for each sample, along with any potential interferences.

Retention efficiency:

A retention efficiency study was performed by drawing 100 L of air (80% relative humidity) at 1 L/min through sample filters that had been spiked with 0.814 micro-g MDA. Instead of using backup pads, blank acid-treated filters were used as backups in each cassette. Upon analysis, the top filters were found to have an average of 91.8% of the spiked amount. There was no MDA found on the bottom filters, so the amount lost was probably due to the slight instability of the MDA salt.

Extraction efficiency:

The average extraction efficiency for six filters spiked at the target concentration is 99.6%. The stability of extracted and derivatized samples was verified by reanalyzing the above six samples the next day using fresh standards. The average extraction efficiency for the reanalyzed samples is 98.7%.

Recommended air volume and sampling rate. The recommended air volume is 100 L. The recommended sampling rate is 1 L/min.

Interferences (sampling):

MDI appears to be a positive interference. It was found that when MDI was spiked onto an acid-treated filter, the MDI converted to MDA after air was drawn through it. Suspected interferences should be reported to the laboratory with submitted samples.

Safety precautions (sampling):

Attach the sampling equipment to the employees so that it will not interfere with work performance or safety. Follow all safety procedures that apply to the work area being sampled.

Analytical procedure:

Apparatus:

The following are required for analysis. A GC equipped with an electron capture detector. For this evaluation a

Hewlett Packard 5880 Gas Chromatograph equipped with a Nickel 63 High Temperature Electron Capture Detector and a Linearizer was used. A GC column capable of separating the MDA derivative from the solvent and interferences. A 6 ft x 2 mm ID glass column packed with 3% OV-101 coated on 100/120 Gas Chrom Q or a 25 meter DB-1 or DB-5 capillary column is recommended for this evaluation. An electronic integrator or some other suitable means of measuring peak areas or heights. Small resealable vials with Teflon-lined caps capable of holding 4 mL. A dispenser or pipet for toluene capable of delivering 2.9 mL. Pipets (or repipets with plastic or Teflon tips) capable of delivering 1 mL for the sodium hydroxide and buffer solutions. A repipet capable of delivering 25 micro-L HFAA. Syringes for preparation of standards and injection of standards and samples into a GC. Volumetric flasks and pipets to dilute the pure MDA in preparation of standards. Disposable pipets to transfer the toluene layers after the samples are extracted.

Reagents:
0.5 NaOH prepared from reagent grade NaOH. Toluene, pesticide grade. Burdick and Jackson distilled in glass toluene was used. Heptafluorobutyric acid anhydride (HFAA). HFAA from Pierce Chemical Company was used. pH 7.0 phosphate buffer, prepared from 136 g potassium dihydrogen phosphate and 1 L deionized water. The pH is adjusted to 7.0 with saturated sodium hydroxide solution. 4,4'-methylenedianiline (MDA), reagent grade.
Standard preparation:
Concentrated stock standards are prepared by diluting pure MDA with toluene. Analytical standards are prepared by injecting micro-L amounts of diluted stock standards into vials that contain 2.0 mL toluene. 25 micro-L HFAA are added to each vial and the vials are capped and shaken for 10 seconds. After 10 min, 1 mL of buffer is added to each vial. The vials are recapped and shaken for 10 seconds. After allowing the layers to separate, aliquots of the toluene (upper) layers are removed with a syringe and analyzed by GC. Analytical standard concentrations should bracket sample concentrations. Thus, if samples fall out of the range of prepared standards, additional standards must be prepared to ascertain detector response.
Sample preparation:
The sample filters are received in vials containing deionized water. 1 mL of 0.5N NaOH and 2.0 mL toluene are added to each vial. The vials are recapped and shaken for 10 min. After allowing the layers to separate, approximately 1 mL aliquots of the toluene (upper) layers are transferred to separate vials with clean disposable pipets. The toluene layers are treated and analyzed.

Analysis:
GC conditions.
Zone temperatures: Column—220 degrees C. Injector—235 degrees C. Detector—335 degrees C. Gas flows, $N_2$ Column—30 mL/min He Purge—Column 0.9 mL/min. (capillary) with 30 mL/min. $ArCH_4$ (95/5) make up gas Injection volume: 5.0 uL Column: 6 ft x 1/8 in ID glass, 3% OV-101 on 100/120 Gas Chrom Q or 25 Retention time of MDA derivative: 2.5 to 3.5, depending on column and flow. Chromatogram. Peak areas or heights are measured by an integrator or other suitable means. A calibration curve is constructed by plotting response (peak areas or heights) of standard injections versus micro-g of MDA per sample. Sample concentrations must be bracketed by standards.
Interferences (analytical):
Any compound that gives an electron capture detector response and has the same general retention time as the HFAA derivative of MDA is a potential interference. Suspected interferences reported to the laboratory with submitted samples by the industrial hygienist must be considered before samples are derivatized. GC parameters may be changed to possibly circumvent interferences. Retention time on a single column is not considered proof of chemical identity. Analyte identity should be confirmed by GC/MS if possible.

Calculations:
The analyte concentration for samples is obtained from the calibration curve in terms of micro-g MDA per sample. The extraction efficiency is 100%. If any MDA is found on the blank, that amount is subtracted from the sample amounts. The air concentrations are calculated using the following formulae. micro-$\mu g/m^3$ = (micro-$\mu$g MDA per sample) (1000)/(L of air sampled) ppb = (micro-$\mu g/m^3$) (24.46)/(198.3) = (micro-$\mu g/m^3$)(0.1233) where 24.46 is the molar volume at 25 degrees C. and 760 mm Hg.
Safety precautions (analytical). Avoid skin contact and inhalation of all chemicals. Restrict the use of all chemicals to a fume hood if possible. Wear safety glasses and a lab coat at all times while in the lab area.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17347, filed 2/3/93, effective 3/15/93.]

**WAC 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.]

**WAC 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.]

**WAC 296-155-17353 Appendix E-1-a—Isoamyl acetate (banana oil) protocol.** (1) Odor threshold screening.

(a) Three 1-liter glass jars with metal lids (e.g. Mason or Ball jars) are required.

(b) Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C. shall be used for the solutions.

(c) The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 cc of pure IAA to 800 cc of odor-free water in a 1-liter jar and shaking for 30 seconds. This solution shall be prepared new at least weekly.

(d) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated so that circulation of the test solution does not occur and cross contaminate the different testing sites.

(e) The odor test solution is prepared in a second jar by placing 0.4 cc of the stock solution into 500 cc of odor-free water using a clean dropper or pipette. Shake for 30 seconds and allow to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution may be used for only one day.

(f) A test blank is prepared in a third jar by adding 500 cc of odor-free water.

(g) The odor test and test blank jars shall be labelled 1 and 2 for jar identification. The following instructions shall be typed on a card and placed 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."

(h) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(i) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test may not be used.

(j) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(2) Respirator selection.

(a) The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. The selection shall include at least three sizes of elastomeric half facepieces, from at least two manufacturers.

(b) The selection process shall be conducted in a room separate from the fit test chamber to prevent odor fatigue. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension, and how to determine a "comfortable" respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, as it is only a review.

(c) The test subject should understand that the employee is being asked to select the respirator which provides the most comfortable fit.

(d) The test subject holds each facepiece up to the face and eliminates those which obviously do not give a comfortable fit. Normally, selection will begin with a half-mask and if a comfortable fit cannot be found, the subject will be asked to test the full facepiece respirators. (A small percentage of users will not be able to wear any half-mask.)

(e) The more comfortable facepieces are noted; the most comfortable mask is donned and worn at least five minutes to assess comfort. All donning and adjustments of the facepiece shall be performed by the test subject without assistance from the test conductor or other person. Assistance in assessing comfort can be given by discussing the points in subdivision (f) below. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

(f) Assessment of comfort shall include reviewing the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator after donning:

(i) Positioning of mask on nose;

(ii) Room for eye protection;

(iii) Room to talk;

(iv) Positioning mask on face and cheeks.

(g) The following criteria shall be used to help determine the adequacy of the respirator fit:

(i) Chin properly placed;

(ii) Strap tension;

(iii) Fit across nose bridge;

(iv) Distance from nose to chin;

(v) Tendency to slip;

(vi) Self-observation in mirror.

(h) The test subject shall perform the conventional negative-pressure or positive-pressure fit checks (e.g., see ANSI Z88.2-1980A7). Before beginning the negative-pressure or positive-pressure test, the subject shall be told to "seat" the mask by rapidly moving the head from side to side and up and down, while taking a few deep breaths.

(i) The test subject is now ready for fit testing.

(j) After passing the fit test, the test subject shall be questioned again regarding the comfort of the respirator. If the respirator has become uncomfortable, another model of respirator shall be tried.

(k) The employee shall be given the opportunity to select a different facepiece and to be retested if the chosen facepiece becomes increasingly uncomfortable at any time.

(3) Fit test.

(a) The fit test chamber shall be similar to a clear 55 gallon drum liner suspended inverted over a 2-foot diameter frame, so that the top of chamber is about 6 inches above the test subject's head. The inside top center of the chamber shall have a small hook attached.

(b) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors. The cartridges or canisters shall be replaced as necessary to maintain the effectiveness of the respirator.

(c) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(d) A copy of the following test exercises and Rainbow Passage shall be taped to the inside of the test chamber:

(e) Test exercises.

(i) Breathe normally.

(ii) Breathe deeply. Be certain breaths are deep and regular.

(iii) Turn head all the way from one side to the other. Inhale on each side. Be certain movement is complete. Do not bump the respirator against the shoulders.

(iv) Nod head up and down. Inhale when head is in the full up position (looking toward ceiling). Be certain motions

are complete and made about every second. Do not bump the respirator on the chest.

(v) Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it aloud will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may also be used.

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.

(vi) Jog in place.

(vii) Breathe normally.

(f) Each test subject shall wear the respirator for at least 10 minutes before starting the fit test.

(g) Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel or other porous absorbent single ply material, folded in half and wetted with three-quarters of one cc of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber.

(h) Allow two minutes for the IAA test concentration to be reached before starting the fit test exercises.

(i) Each exercise described in subdivision (e) of this subsection shall be performed for at least one minute.

(j) If at any time during the test, the subject detects the banana-like odor of IAA, the test has failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(k) If the test is failed, the subject shall return to the selection room and remove the respirator, repeat the odor sensitivity test, select and put on another respirator, return to the test chamber, and again begin the procedure described in subdivisions (d) through (j) of this subsection. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait about 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(l) If a person cannot pass the fit test described above wearing a half-mask respirator from the available selection, full facepiece models must be used.

(m) When a respirator is found that passes the test, the subject must break the faceseal and take a breath before exiting the chamber. This is to assure that the reason the test subject is not smelling the IAA is the good fit of the respirator facepiece seal and not olfactory fatigue.

(n) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test. To keep the area from becoming contaminated, the used towels shall be kept in a self-sealing bag so there is no significant IAA concentration buildup in the test chamber during subsequent tests.

(o) Persons who have successfully passed this fit test with a half-mask respirator may be assigned the use of the test respirator in atmospheres with up to 10 times the PEL. In atmospheres greater than 10 times, and less than 50 times the PEL (up to 50 ppm), the subject must pass the IAA test using a full face negative-pressure respirator. (The concentration of the IAA inside the test chamber must be increased by five times for QLFT of the full facepiece.)

(p) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(q) If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as a powered air-purifying respirator, supplied air respirator, or self-contained breathing apparatus.

(r) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.

(s) Qualitative fit testing shall be repeated at least every 12 months.

(t) In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

(i) Weight change of 20 pounds or more;

(ii) Significant facial scarring in the area of the facepiece seal;

(iii) Significant dental changes; i.e., multiple extractions without prosthesis, or acquiring dentures;

(iv) Reconstructive or cosmetic surgery; or

(v) Any other condition that may interfere with facepiece sealing.

(4) Recordkeeping. A summary of all test results shall be maintained by the employer for 3 years. The summary shall include:

(a) Name of test subject.

(b) Date of testing.

(c) Name of the test conductor.

(d) Respirators selected (indicate manufacturer, model, size, and approval number).

(e) Testing agent.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17353, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17355 Appendix E-1-b—Saccharin solution aerosol protocol.** (1) Respirator selection. Respirators shall be selected as described in WAC 296-155-17353(2) (respirator selection), except that each respirator shall be equipped with a particulate filter.

(2) Taste threshold screening.

(a) An enclosure placed over the head and shoulders shall be used for threshold screening (to determine if the individual can taste saccharin) and for fit testing. The enclosure shall be approximately 12 inches in diameter by 14 inches tall with at least the front clear to allow free movement of the head when a respirator is worn.

(b) The test enclosure shall have a three-quarter inch hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(c) The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.

(d) During the threshold screening test, the test subject shall don the test enclosure and breathe with open mouth with tongue extended.

(e) Using a DeVilbiss Model 40 inhalation medication nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(f) The threshold check solution consists of 0.83 grams of sodium saccharin, USP in water. It can be prepared by putting 1 cc of the test solution (see C 7 below) in 100 cc of water.

(g) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then is released and allowed to fully expand.

(h) Ten squeezes of the nebulizer bulb are repeated rapidly and then the test subject is asked whether the saccharin can be tasted.

(i) If the first response is negative, ten more squeezes of the nebulizer bulb are repeated rapidly and the test subject is again asked whether the saccharin can be tasted.

(j) If the second response is negative ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin can be tasted.

(k) The test conductor will take note of the number of squeezes required to elicit a taste response.

(l) If the saccharin is not tasted after 30 squeezes (Step 10), the saccharin fit test cannot be performed on the test subject.

(m) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(n) Correct use of the nebulizer means that approximately 1 cc of liquid is used at a time in the nebulizer body.

(o) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least every four hours.

(3) Fit test.

(a) The test subject may not eat, drink (except plain water), or chew gum for 15 minutes before the test.

(b) The test subject shall don and adjust the respirator without assistance from any person.

(c) The fit test uses the same enclosure described in IIB above.

(d) Each test subject shall wear the respirator for at least 10 minutes before starting the fit test.

(i) This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of cooperation, and the purpose for the head exercises; or to demonstrate some of the exercises.

(ii) The test subject shall perform the conventional negative-pressure or positive-pressure fit tests (see ANZI [ANSI] Z88.2 1980 A7).

(e) The test subject shall enter the enclosure while wearing the respirator selected in section IB above. This respirator shall be properly adjusted and equipped with a particulate filter.

(f) A second DeVilbiss Model 40 inhalation medication nebulizer is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(g) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 cc of warm water.

(h) As before, the test subject shall breathe with mouth open and tongue extended.

(i) The nebulizer is inserted into the hole in the front of the enclosure and the fit test solution is sprayed into the enclosure using the same technique as for the taste threshold screening and the same number of squeezes required to elicit a taste response in the screening. (See B8 through B10 above.)

(j) After generation of the aerosol read the following instructions to the test subject. The test subject shall perform the exercises for one minute each.

(i) Breathe normally.

(ii) Breathe deeply. Be certain breaths are deep and regular.

(iii) Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.

(iv) Nod head up and down. Be certain motions are complete. Inhale when head is in the full up position (when looking toward the ceiling). Do not bump the respirator on the chest.

(v) Talk. Talk aloud and slowly. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be useful to satisfy this requirement.

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 his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(vi) Jog in place.

(vii) Breathe normally.

(k) At the beginning of each exercise, the aerosol concentration shall be replenished using one-half the number of squeezes as initially described in C9.

(l) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected.

(m) If the saccharin is detected the fit is deemed unsatisfactory and a different respirator shall be tried.

(n) Successful completion of the test protocol shall allow the use of the half-mask tested respirator in contaminated atmospheres up to 10 times the PEL of MDA. In other words this protocol may not be used to assign protection factors no higher than ten.

(o) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(p) If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied-air respirator, or self-contained breathing apparatus.

(q) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respirator diseases or pulmonary medicine to

determine whether the test subject can wear a respirator while performing her or his duties.

(r) Qualitative fit testing shall be repeated at least every 12 months.

(s) In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

(i) Weight change of 20 pounds or more;

(ii) Significant facial scarring in the area of the facepiece seal;

(iii) Significant dental changes; i.e., multiple extractions without prosthesis, or acquiring dentures;

(iv) Reconstructive or cosmetic surgery; or

(v) Any other condition that may interfere with facepiece sealing.

(4) Recordkeeping. A summary of all test results shall be maintained by the employer for 3 years. The summary shall include:

(a) Name of test subject.

(b) Date of testing.

(c) Name of test conductor.

(d) Respirators selected (indicate manufacturer, model, size, and approval number).

(e) Testing agent.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17355, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17357 Appendix E-1-c—Irritant fume protocol.** (1) Respirator selection. Respirators shall be selected as described in section IB above, except that each respirator shall be equipped with a combination of high-efficiency and acid-gas cartridges.

(2) Fit test.

(a) The test subject shall be allowed to smell a weak concentration of the irritant smoke to familiarize the subject with the characteristic odor.

(b) The test subject shall properly don the respirator selected as above, and wear it for at least 10 minutes before starting the fit test.

(c) The test conductor shall review this protocol with the test subject before testing.

(d) The test subject shall perform the conventional positive-pressure and negative-pressure fit checks (see ANSI Z88.2 1980). Failure of either check shall be cause to select an alternate respirator.

(e) Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA part #5645, or equivalent. Attach a short length of tubing to one end of the smoke tube. Attach the other end of the smoke tube to a low-pressure air pump set to deliver 200 milliliters per minute.

(f) Advise the test subject that the smoke can be irritating to the eyes and instruct the subject to keep the eyes closed while the test is performed.

(g) The test conductor shall direct the stream of irritant smoke from the tube towards the faceseal area of the test subject. The person conducting the test shall begin with the tube at least 12 inches from the facepiece and gradually move to within one inch, moving around the whole perimeter of the mask.

(h) The test subject shall be instructed to do the following exercises while the respirator is being challenged by the smoke. Each exercise shall be performed for one minute.

(i) Breathe normally.

(ii) Breathe deeply. Be certain breaths are deep and regular.

(iii) Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.

(iv) Nod head up and down. Be certain motions are complete and made every second. Inhale when head is in the full up position (looking toward ceiling). Do not bump the respirator against the chest.

(v) Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may also be used.
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 his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(vi) Jogging in place.

(vii) Breathe normally.

(i) The test subject shall indicate to the test conductor if the irritant smoke is detected. If smoke is detected, the test conductor shall stop the test. In this case, the tested respirator is rejected and another respirator shall be selected.

(j) Each test subject passing the smoke test (i.e., without detecting the smoke) shall be given a sensitivity check of smoke from the same tube to determine if the test subject reacts to the smoke. Failure to evoke a response shall void the fit test.

(k) Steps (2)(d), (i), and (j) of this fit test protocol shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agents.

(l) Respirators successfully tested by the protocol may be used in contaminated atmospheres up to ten times the PEL of MDA.

(m) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(n) If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied-air respirator, or self-contained breathing apparatus.

(o) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respirator diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.

(p) Qualitative fit testing shall be repeated at least every 12 months.

(q) In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

(i) Weight change of 20 pounds or more;

(ii) Significant facial scarring in the area of the facepiece seal;

(iii) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures;

(iv) Reconstructive or cosmetic surgery; or

(v) Any other condition that may interfere with facepiece sealing.

(3) Recordkeeping. A summary of all test results shall be maintained by the employer for 3 years. The summary shall include:

(a) Name of test subject.

(b) Date of testing.

(c) Name of test conductor.

(d) Respirators selected (indicate manufacturer, model, size, and approval number).

(e) Testing agent.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17357, filed 2/3/93, effective 3/15/93.]

**WAC 296-155-17359 Appendix E-2—Quantitative fit test procedures.** (1) General.

(a) The method applies to the negative-pressure nonpowered air-purifying respirators only.

(b) The employer shall assign an individual (with help as needed) who shall assume the full responsibility for implementing the respirator quantitative fit test program.

(2) Definition.

(a) "Quantitative fit test" means the measurement of the effectiveness of a respirator seal in excluding the ambient atmosphere. The test is performed by dividing the measured concentration of challenge agent in a test chamber by the measured concentration of the challenge agent inside the respirator facepiece when the normal air-purifying element has been replaced by an essentially perfect purifying element.

(b) "Challenge agent" means the air contaminant introduced into a test chamber so that its concentration inside and outside the respirator may be compared.

(c) "Test subject" means the person wearing the respirator for quantitative fit testing.

(d) "Normal standing position" means standing erect and straight with arms down along the sides and looking straight ahead.

(e) "Fit factor" means the ratio of challenge agent concentration outside with respect to the inside of a respirator inlet covering (facepiece or enclosure).

(3) Apparatus.

(a) Instrumentation. Corn oil, sodium chloride, or other appropriate aerosol generation, dilution, and measurement systems shall be used for quantitative fit test.

(b) Test chamber. The test chamber shall be large enough to permit all test subjects to freely perform all required exercises without distributing the challenge agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the challenge agent is effectively isolated from the ambient air yet uniform in concentration throughout the chamber.

(c) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high-efficiency particular filter supplied by the same manufacturer.

(d) The sampling instrument shall be selected so that a strip chart record may be made of the test showing the rise and fall of challenge agent concentration with each inspiration and expiration at fit factors of at least 2,000.

(e) The combination of substitute air-purifying elements (if any), challenge agent, and challenge agent concentration in the test chamber shall be such that the test subject is not exposed in excess of PEL to the challenge agent at any time during the testing process.

(f) The sampling port on the test specimen respirator shall be placed and constructed so that there is no detectable leak around the port, a free air flow is allowed into the sampling line at all times, and so there is no interference with the fit or performance of the respirator.

(g) The test chamber and test set-up shall permit the person administering the test to observe one test subject inside the chamber during the test.

(h) The equipment generating the challenge atmosphere shall maintain the concentration of challenge agent constant within a 10 percent variation for the duration of the test.

(i) The time lag (interval between an event and its being recorded on the strip chart) of the instrumentation may not exceed 2 seconds.

(j) The tubing for the test chamber atmosphere and for the respirator sampling port shall be the same diameter, length, and material. It shall be kept as short as possible. The smallest diameter tubing recommended by the manufacturer shall be used.

(k) The exhaust flow from the test chamber shall pass through a high-efficiency filter before release to the room.

(l) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(4) Procedural requirements.

(a) The fitting of half-mask respirators should be started with those having multiple sizes and a variety of interchangeable cartridges and canisters such as the MSA Comfr II-M, Norton M, Survivair M A- O M, or Scott-M. Use either of the tests outlined below to assure that the facepiece is properly adjusted.

(i) Positive-pressure test. With the exhaust port(s) blocked the negative pressure of slight inhalation should remain constant for several seconds.

(ii) Negative-pressure test. With the intake port(s) blocked the negative pressure slight inhalation should remain constant for several seconds.

(b) After a facepiece is adjusted, the test subject shall wear the facepiece for at least 5 minutes before conducting a qualitative test by using either of the methods described below and using the exercise regime described in subsection (5)(a) through (e) of this section.

(i) Isoamyl acetate test. When using organic vapor cartridges, the test subject who can smell the odor should be unable to detect the odor of isoamyl acetate squirted into the air near the most vulnerable portions of the facepiece seal. In a location which is separated from the test area, the test subject shall be instructed to close her/his eyes during the test period. A combination cartridge or canister with organic

vapor and high-efficiency filters shall be used when available for the particular mask being tested. The test subject shall be given an opportunity to smell the odor of isoamyl acetate before the test is conducted.

(ii) Irritant fume test. When using high-efficiency filters, the test subject should be unable to detect the odor of irritant fume (stannic chloride or titanium tetrachloride ventilation smoke tubes) squirted into the air near the most vulnerable portions of the facepiece seal. The test subject shall be instructed to close her/his eyes during the test period.

(c) The test subject may enter the quantitative testing chamber only if she or he has obtained a satisfactory fit as stated in subdivision (b) of this subsection.

(d) Before the subject enters the test chamber, a reasonably stable challenge agent concentration shall be measured in the test chamber.

(e) Immediately after the subject enters the test chamber, the challenge agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half-mask and 1 percent for a full facepiece.

(f) A stable challenge agent concentration shall be obtained prior to the actual start of testing.

(g) Respirator restraining straps may not be overtightened for testing. The straps shall be adjusted by the wearer to give a reasonably comfortable fit typical of normal use.

(5) Exercise regime. Prior to entering the test chamber, the test subject shall be given complete instructions as to her/his part in the test procedures. The test subject shall perform the following exercises, in the order given, for each independent test.

(a) Normal breathing (NB). In the normal standing position, without talking, the subject shall breathe normally for at least one minute.

(b) Deep breathing (DB). In the normal standing position the subject shall do deep breathing for at least one minute pausing so as not to hyperventilate.

(c) Turning head side to side (SS). Standing in place the subject shall slowly turn her or his head from side to side between the extreme positions to each side. The head shall be held at each extreme position for at least 5 seconds. Perform for at least five complete cycles.

(d) Moving head up and down (UD). Standing in place, the subject shall slowly move her or his head up and down between the extreme position straight up and the extreme position straight down. The head shall be held at each extreme position for at least 5 seconds. Perform for at least five complete cycles.

(e) Reading (R). The subject shall read out slowly and loud so as to be heard clearly by the test conductor or monitor. The test subject shall read the "Rainbow Passage" at the end of this section.

(f) Grimace (G). The test subject shall grimace, smile, frown, and generally contort the face using the facial muscles. Continue for at least 15 seconds.

(g) Bend over and touch toes (B). The test subject shall bend at the waist and touch toes and return to upright position. Repeat for at least one minute.

(h) Jogging in place (J). The test subject shall jog in place for at least one minute.

(i) Normal breathing (NB). In the normal standing position, without talking, the subject shall breathe normally for at least one minute.

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.

(6) Termination of tests. The test shall be terminated whenever any single peak penetration exceeds 5 percent for half-masks and 1 percent for full facepieces. The test subject may be refitted and retested. If two of the three required tests are terminated, the fit shall be deemed inadequate.

(7) Calculation of fit factors.

(a) The fit factor determined by the quantitative fit test equals the average concentration inside the respirator.

(b) The average test chamber concentration is the arithmetic average of the test chamber concentration at the beginning and at the end of the test.

(c) The average peak concentration of the challenge agent inside the respirator shall be the arithmetic average peak concentrations for each of the nine exercises of the test which are computed as the arithmetic average of the peak concentrations found for each breath during the exercise.

(d) The average peak concentration for an exercise may be determined graphically if there is not a great variation in the peak concentrations during a single exercise.

(8) Interpretation of test results. The fit factor measured by the quantitative fit testing shall be the lowest of the three protection factors resulting from three independent tests.

(9) Other requirements.

(a) The test subject shall not be permitted to wear a half-mask or full facepiece if the minimum fit factor of 250 or 1,250, respectively, cannot be obtained. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied-air respirator, or self-contained breathing apparatus.

(b) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

(c) If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician to determine whether the test subject can wear a respirator while performing her or his duties.

(d) The test subject shall be given the opportunity to wear the assigned respirator for one week. If the respirator does not provide a satisfactory fit during actual use, the test subject may request another QNFT which shall be performed immediately.

(e) A respirator fit factor card shall be issued to the subject with the following information:

(i) Name.

(ii) Date of fit test.

(iii) Protection factors obtained through each manufacturer, model and approval number of respirator tested.

(iv) Name and signature of the person that conducted the test.

(f) Filters used for qualitative or quantitative fit testing shall be replaced weekly, whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media. Organic vapor cartridges/canisters shall be replaced daily or sooner if there is any indication of breakthrough by the test agent.

(10) Retesting. In addition, because the sealing of the respirator may be affected, quantitative fit testing shall be repeated immediately when the test subject has a:

(a) Weight change of 20 pounds or more;

(b) Significant facial scarring in the area of the facepiece seal;

(c) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures;

(d) Reconstructive or cosmetic surgery; or

(e) Any other condition that may interfere with facepiece sealing.

(11) Recordkeeping.

(a) A summary of all test results shall be maintained for three years. The summary shall include:

(i) Name of test subject.

(ii) Date of testing.

(iii) Name of the test conductor.

(iv) Fit factors obtained from every respirator tested (indicate manufacturer, model, size, and approval number).

(b) A copy of all test data including the strip chart and results shall be kept for at least five years.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-17359, filed 2/3/93, effective 3/15/93.]

**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 $\mu g/m^3$), 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 $\mu g/m^3$), 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 (± 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. Where respirators are required by this section, the employer shall provide them at no cost to the employee and shall assure that they are used in compliance with the requirements of this section. Respirators shall be used in the following circumstances:

(i) Where exposure levels exceed the PEL, during the time period necessary to install or implement feasible engineering and work practice controls;

(ii) In those maintenance and repair activities and during those brief or intermittent operations where exposures exceed the PEL and engineering and work practice controls are not feasible, or are not required;

(iii) In regulated areas, as prescribed in subsection (5) of this section;

(iv) Where 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) In emergencies;

(vi) Wherever an employee who is exposed to cadmium at or above the action level requests a respirator; and

(vii) Wherever an employee is exposed to cadmium above the PEL and engineering controls are not required under (a)(ii) of this subsection.

(b) Respirator selection.

(i) Where respirators are required under this section, the employer shall select and provide the appropriate respirator as specified in Table 1. The employer shall select respirators from among those jointly approved as acceptable

protection against cadmium dust, fume, and mist by the Mine Safety and Health Administration (MSHA) and by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11.

Table 1
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. |
| >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: [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 x 5 $\mu g/m^3$ = 50 $\mu g/m^3$). 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) in lieu of a negative pressure respirator wherever:

(A) An employee entitled to a respirator chooses to use this type of respirator; and

(B) This respirator will provide adequate protection to the employee.

(c) Respirator program.

(i) Where respiratory protection is required, the employer shall institute a respirator protection program in accordance with chapter 296-62 WAC, Part E.

(ii) The employer shall permit each employee who is required to use an air purifying respirator to leave the regulated area to change the filter elements or replace the respirator whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.

(iii) The employer shall also permit each employee who is required to wear a respirator to leave the regulated area to wash his or her face and the respirator facepiece whenever necessary to prevent skin irritation associated with respirator use.

(iv) If an employee exhibits difficulty in breathing while wearing a respirator during a fit test or during use, the employer shall make available to the employee a medical examination in accordance with subsection (12)(f)(ii) of this section to determine if the employee can wear a respirator while performing the required duties.

(v) No employee shall be assigned a task requiring the use of a respirator if, based upon his or her most recent examination, an examining physician determines that the employee will be unable to continue to function normally while wearing a respirator. If the physician determines the employee must be limited in, or removed from his or her current job because of the employee's inability to wear a respirator, the limitation or removal shall be in accordance with subsection (12)(k) and (l) of this section.

(d) Respirator fit testing.

(i) The employer shall assure that the respirator issued to the employee is fitted properly and exhibits the least possible facepiece leakage.

(ii) For each employee wearing a tight-fitting, air purifying respirator (either negative or positive pressure) who is exposed to airborne concentrations of cadmium that do not exceed 10 times the PEL (10 x 5 $\mu g/m^3$ = 50 $\mu g/m^3$), the employer shall perform either quantitative or qualitative fit testing at the time of initial fitting and at least annually thereafter. If quantitative fit testing is used for a negative pressure respirator, a fit factor that is at least 10 times the protection factor for that class of respirators (Table 1 in (b)(i) of this subsection) shall be achieved at testing.

(iii) For each employee wearing a tight-fitting air purifying respirator (either negative or positive pressure) who is exposed to airborne concentrations of cadmium that

exceed 10 times the PEL (10 x 5 $\mu g/m^3$ = 50 $\mu g/m^3$), the employer shall perform quantitative fit testing at the time of initial fitting and at least annually thereafter. For negative-pressure respirators, a fit factor that is at least ten times the protection factor for that class of respirators (Table 1 in (b)(i) of this subsection) shall be achieved during quantitative fit testing.

(iv) For each employee wearing a tight-fitting, supplied-air respirator or self-contained breathing apparatus, the employer shall perform quantitative fit testing at the time of initial fitting and at least annually thereafter. This shall be accomplished by fit testing an air purifying respirator of identical type facepiece, make, model, and size as the supplied air respirator or self-contained breathing apparatus that is equipped with HEPA filters and tested as a surrogate (substitute) in the negative pressure mode. A fit factor that is at least 10 times the protection factor for that class of respirators (Table 1 in (b)(i) of this subsection) shall be achieved during quantitative fit testing. A supplied-air respirator or self-contained breathing apparatus with the same type facepiece, make, model, and size as the air purifying respirator with which the employee passed the quantitative fit test may then be used by that employee up to the protection factor listed in Table 1 in (b)(i) of this subsection for that class of respirators.

(v) Fit testing shall be conducted in accordance with WAC 296-62-07445. Appendix C.

(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 $\mu g/m^3$.

(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 ($B_2$-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 ($B_2$-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 ($B_2$-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 require-

ments 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, $B_2$-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, $B_2$-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 $B_2$-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, $B_2$-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 $B_2$-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 $B_2$-M exceeds 1500 μ/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, $B_2$-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 $B_2$-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 μg/g Cr; or CdB exceeds 10 μg/lwb; or $B_2$-M exceeds 750 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, $B_2$-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.

(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, $B_2$-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 μg/g Cr, CdB did not exceed 5 μg/lwb, and $B_2$-M did not exceed 300 μg/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 $B_2$-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 μg/g Cr, CdB levels no longer exceed 5 μg/lwb, and $B_2$-M levels no longer exceed 300 μg/g Cr, the employer shall provide biological monitoring for CdU, CdB, and $B_2$-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, $B_2$-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 musculoskeletal 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 $B_2$-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 opinion 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 $B_2$-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 $B_2$-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 determination 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 paragraph 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) Dates.

(a) Effective date. This section shall become effective on June 14, 1993.

(b) Start-up dates. All obligations of this section commence on the effective date except as follows:

(i) Exposure monitoring. Except for small businesses (nineteen or fewer employees), initial monitoring required by subsection (4)(b) of this section shall be completed as soon as possible and in any event no later than 60 days after the effective date of this section. For small businesses, initial monitoring required by subsection (4)(b) of this section shall be completed as soon as possible and in any event no later than 120 days after the effective date of this section.

(ii) The permissible exposure limit (PEL). Except for small businesses, as defined under (b)(i) of this subsection, the employer shall comply with the PEL established by subsection (3) of this section as soon as possible and in any event no later than 90 days after the effective date of this section. For small businesses, the employer shall comply with the PEL established by subsection (3) of this section as soon as possible and in any event no later than 150 days after the effective date of this section.

(iii) Regulated areas. Except for small businesses, as defined under (b)(i) of this subsection, regulated areas required to be established by subsection (5) of this section shall be set up as soon as possible after the results of exposure monitoring are known and in any event no later than 90 days after the effective date of this section. For small businesses, regulated areas required to be established by subsection (5) of this section shall be set up as soon as possible after the results of exposure monitoring are known and in any event no later than 150 days after the effective date of this section.

(iv) Respiratory protection. Except for small businesses, as defined under (b)(i) of this subsection, respiratory protection required by subsection (7) of this section shall be provided as soon as possible and in any event no later than 90 days after the effective date of this section. For small businesses, respiratory protection required by subsection (7) of this section shall be provided as soon as possible and in any event no later than 150 days after the effective date of this section.

(v) Compliance program. Except for small businesses, as defined under (b)(i) of this subsection, written compliance programs required by subsection (6)(b) of this section shall be completed and available as soon as possible and in any event no later than 90 days after the effective date of this section. For small businesses, written compliance programs required by subsection (6)(b) of this section shall be completed and available as soon as possible and in any event no later than 180 days after the effective date of this section.

(vi) Methods of compliance. Except for small businesses, as defined under (b)(i) of this subsection, the engineering controls required by subsection (6)(a) of this section shall be implemented as soon as possible and in any event no later than 120 days after the effective date of this section. For small businesses, the engineering controls required by subsection (6)(a) of this section shall be implemented as soon as possible and in any event no later than 240 days after the effective date of this section. Work practice controls shall be implemented as soon as possible. Work practice controls that are directly related to engineering controls to be implemented shall be implemented as soon as possible after such engineering controls are implemented.

(vii) Hygiene and lunchroom facilities. Except for small businesses, as defined under (b)(i) of this subsection, handwashing facilities, showers, change rooms and eating facilities required by subsection (10) of this section, whether permanent or temporary, shall be provided as soon as possible and in any event no later than 60 days after the effective date of this section. For small businesses, handwashing facilities, showers, change rooms and eating facilities required by subsection (10) of this section, whether permanent or temporary, shall be provided as soon as possible and in any event no later than 120 days after the effective date of this section.

(viii) Employee information and training. Except for small businesses, as defined under (b)(i) of this subsection, employee information and training required by subsection (13)(d) of this section shall be provided as soon as possible and in any event no later than 90 days after the effective date of this section. For small businesses, employee information and training required by subsection (13)(d) of this section shall be provided as soon as possible and in any event no later than 180 days after the effective date of this section.

(ix) Medical surveillance. Except for small businesses, as defined under (b)(i) of this subsection, initial medical examinations required by subsection (12) of this section shall be provided as soon as possible and in any event no later than 90 days after the effective date of this section. For small businesses, initial medical examinations required by subsection (12) of this section shall be provided as soon as possible and in any event no later than 180 days after the effective date of this section.

(17) Appendices.

(a) WAC 296-62-07445, Appendix C, is a part of this standard, and compliance with its contents is 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: Chapter 49.17 RCW. 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 296-155-176 Lead.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-176, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17603 Scope.** WAC 296-155-176, Lead, applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by WAC 296-62-07521 (1)(b) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

(1) Demolition or salvage of structures where lead or materials containing lead are present;

(2) Removal or encapsulation of materials containing lead;

(3) New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

(4) Installation of products containing lead;

(5) Lead contamination/emergency cleanup;

(6) Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and

(7) Maintenance operations associated with the construction activities described in this section.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17603, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17605 Definitions.** (1) Action level means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 $\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA).

(2) Competent person means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

(3) Director means the director of labor and industries, or his/her designated representative.

(4) Lead means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

(5) This section means WAC 296-155-176 through 296-155-17656.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17605, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17607 Permissible exposure limit.** (1) The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 $\mu g/m^3$) averaged over an 8-hour period.

(2) If an employee is exposed to lead for more than 8 hours in any work day the employees' allowable exposure, as a time weighted average (TWA) for that day, shall be reduced according to the following formula:

*Allowable employee exposure (in $\mu g/m^3$)=400 divided by hours worked in the day.*

(3) When respirators are used to limit employee exposure as required by this section and all the requirements of WAC 296-155-17611(1) and 296-155-17613 have been met, employee exposure 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.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17607, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17609 Exposure assessment.** (1) General.

(a) Each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level.

(b) For the purposes of this section, employee exposure is that exposure which would occur if the employee were not using a respirator.

(c) With the exception of monitoring under subsection (3) of this section, where monitoring is required by this standard, the employer shall collect personal samples representative of a full shift including at least one sample for each job classification in each work area either for each shift or for the shift with the highest exposure level.

(d) Full shift personal samples shall be representative of the monitored employee's regular, daily exposure to lead.

(2) Protection of employees during assessment of exposure.

(a) With respect to the lead related tasks listed in this subdivision, where lead is present, until the employer performs an employee exposure assessment as required in this section and documents that the employee performing any of the listed tasks is not exposed above the PEL, the employer shall treat the employee as if the employee were exposed above the PEL, and not in excess of ten (10) times the PEL, and shall implement employee protective measures prescribed in subdivision (e) of this subsection. The tasks covered by this requirement are:

(i) Where lead containing coatings or paint are present: Manual demolition of structures (e.g, dry wall), manual scraping, manual sanding, heat gun applications, and power tool cleaning with dust collection systems;

(ii) Spray painting with lead paint.

(b) In addition, with regard to tasks not listed in subdivision (a), where the employer has any reason to believe that an employee performing the task may be exposed to lead in excess of the PEL, until the employer performs an employee exposure assessment as required by this section and documents that the employee's lead exposure is not above the PEL the employer shall treat the employee as if the employee were exposed above the PEL and shall implement employee protective measures as prescribed in subdivision (e) of this subsection.

(c) With respect to the tasks listed in this subdivision, where lead is present, until the employer performs an employee exposure assessment as required in this section, and documents that the employee performing any of the listed tasks is not exposed in excess of 500 $\mu g/m^3$, the employer shall treat the employee as if the employee were exposed to lead in excess of 500 $\mu g/m^3$ and shall implement employee protective measures as prescribed in subdivision

(e) of this subsection. Where the employer does establish that the employee is exposed to levels of lead below 500 $\mu g/m^3$, the employer may provide the exposed employee with the appropriate respirator prescribed for such use at such lower exposures, in accordance with Table 1 of WAC 296-155-17613. The tasks covered by this requirement are:

(i) Using lead containing mortar; lead burning;

(ii) Where lead containing coatings or paint are present: Rivet busting; power tool cleaning without dust collection systems; cleanup activities where dry expendable abrasives are used; and abrasive blasting enclosure movement and removal.

(d) With respect to the tasks listed in this subdivision, where lead is present, until the employer performs an employee exposure assessment as required in this section and documents that the employee performing any of the listed tasks is not exposed to lead in excess of 2,500 $\mu g/m^3$ (50xPEL), the employer shall treat the employee as if the employee were exposed to lead in excess of 2,500 $\mu g/m^3$ and shall implement employee protective measures as prescribed in (e) of this subsection. Where the employer does establish that the employee is exposed to levels of lead below 2,500 $\mu g/m^3$, the employer may provide the exposed employee with the appropriate respirator prescribed for use at such lower exposures, in accordance with Table I of this WAC 296-155-17613. Protection described in this section is required where lead containing coatings or paint are present on structures when performing:

(i) Abrasive blasting;

(ii) Welding;

(iii) Cutting; and

(iv) Torch burning.

(e) Until the employer performs an employee exposure assessment as required by this section and determines actual employee exposure, the employer shall provide to employees performing the tasks described in (a) through (d) of this subsection with interim protection as follows:

(i) Appropriate respiratory protection in accordance with WAC 296-155-17613.

(ii) Appropriate personal protective clothing and equipment in accordance with WAC 296-155-17615.

(iii) Change areas in accordance with WAC 296-155-17619(2). (iv) Hand washing facilities in accordance with WAC 296-155-17619(5).

(v) Biological monitoring in accordance with WAC 296-155-17621 (1)(a), to consist of blood sampling and analysis for lead and zinc protoporphyrin levels, and

(vi) Training as required by WAC 296-155-17625 (1)(a) regarding Part C of chapter 296-62 WAC, Hazard communication; training as required by WAC 296-155-17625 (2)(c), regarding use of respirators; and training in accordance with WAC 296-155-100.

(3) Basis of initial determination.

(a) Except as provided by (c) and (d) of this subsection the employer shall monitor employee exposures and shall base initial determinations on the employee exposure monitoring results and any of the following, relevant considerations:

(i) Any information, observations, or calculations which would indicate employee exposure to lead;

(ii) Any previous measurements of airborne lead; and

(iii) Any employee complaints of symptoms which may be attributable to exposure to lead.

(b) Monitoring for the initial determination where performed 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.

(c) Where the employer has previously monitored for lead exposures, and the data were obtained within the past 12 months during work operations conducted under workplace conditions closely resembling the processes, type of material, 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 subdivision (a) of this subsection and subsection (5) of this section if the sampling and analytical methods meet the accuracy and confidence levels of subsection (9) of this section.

(d) Where the employer has objective data, demonstrating that a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level during processing, use, or handling, the employer may rely upon such data instead of implementing initial monitoring.

(i) The employer shall establish and maintain an accurate record documenting the nature and relevancy of objective data as specified in WAC 296-155-17629(4), where used in assessing employee exposure in lieu of exposure monitoring.

(ii) Objective data, as described in subdivision (d) of this subsection, is not permitted to be used for exposure assessment in connection with subsection (2) of this section.

(4) Positive initial determination and initial monitoring.

(a) Where a determination conducted under subsections (1), (2) and (3) 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.

(b) Where the employer has previously monitored for lead exposure, and the data were obtained within the past 12 months during work operations conducted under workplace conditions closely resembling the processes, type of material, 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) of this subsection if the sampling and analytical methods meet the accuracy and confidence levels of subsection (9) of this section.

(5) Negative initial determination. Where a determination, conducted under subsections (1), (2), and (3) 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 subsection (3)(a) 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.

(6) Frequency.

(a) If the initial determination reveals employee exposure to be below the action level further exposure determination need not be repeated except as otherwise provided in subsection (7) of this section.

(b) If the initial determination or subsequent determination reveals employee exposure to be at or above the action level but at or below the PEL the employer shall perform monitoring in accordance with this section at least every 6 months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in subsection (7) of this section.

(c) If the initial determination reveals that employee exposure is above the PEL the employer shall perform monitoring quarterly. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are at or 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 subdivision (b) of this subsection, except as otherwise provided in subsection (7) of this section. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in subsection (7) of this section.

(7) Additional exposure assessments. Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed at or above the action level being exposed above the PEL, the employer shall conduct additional monitoring in accordance with this section.

(8) Employee notification.

(a) Within 5 working days after completion of the exposure assessment the employer shall notify each employee in writing of the results which represent that employee's exposure.

(b) Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL the employer shall include in the written notice a statement that the employees exposure was at or above that level and a description of the corrective action taken or to be taken to reduce exposure to below that level.

(9) Accuracy of measurement. The employer shall use a method of monitoring and analysis which has an accuracy (to a confidence level of 95%) of not less than plus or minus 25 percent for airborne concentrations of lead equal to or greater than 30 $\mu g/m^3$.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17609, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17611 Methods of compliance.** (1) Engineering and work practice controls. The employer shall implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead to or below the permissible exposure limit to the extent that such controls are feasible. Wherever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit prescribed in WAC 296-155-17607, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them by the use of respiratory protection that complies with the requirements of WAC 296-155-17613.

(2) Compliance program.

(a) Prior to commencement of the job each employer shall establish and implement a written compliance program to achieve compliance with WAC 296-155-17607.

(b) Written plans for these compliance programs shall include at least the following:

(i) A description of each activity in which lead is emitted; e.g., equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices;

(ii) A description of the specific means that will be employed to achieve compliance and, where engineering controls are required engineering plans and studies used to determine methods selected for controlling exposure to lead;

(iii) A report of the technology considered in meeting the PEL;

(iv) Air monitoring data which documents the source of lead emissions;

(v) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;

(vi) A work practice program which includes under requirements in WAC 296-155-17615, 296-155-17617, and 296-155-17619, and incorporates other relevant work practices such as those specified in subsection (5) of this section;

(vii) An administrative control schedule required by subsection (4) of this section, if applicable;

(viii) Other relevant information.

(c) The compliance program shall provide for frequent and regular inspections of job sites, materials, and equipment to be made by a competent person.

(d) Written programs shall be submitted upon request to any affected employee or authorized employee representatives, and the director, and shall be available at the worksite for examination and copying by the director.

(e) Written programs shall be revised and updated at least every 6 months to reflect the current status of the program.

(3) Mechanical ventilation. When ventilation is used to control lead exposure, the employer shall evaluate the mechanical performance of the system in controlling exposure as necessary to maintain its effectiveness.

(4) 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:

(a) Name or identification number of each affected employee;

(b) Duration and exposure levels at each job or work station where each affected employee is located; and

(c) Any other information which may be useful in assessing the reliability of administrative controls to reduce exposure to lead.

(5) The employer shall ensure that, to the extent relevant, employees follow good work practices such as described in Appendix B, WAC 296-155-17652.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17611, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17613 Respiratory protection.** (1) General. Where the use of respirators is required by WAC 296-155-176 the employer shall provide, at no cost to the employee, and assure the use of respirators which comply with the requirements of this section. Respirators shall be used in the following circumstances:

(a) Whenever an employee's exposure to lead exceeds the PEL;

(b) In work situations in which engineering controls and work practices are not sufficient to reduce exposures to or below the PEL;

(c) Whenever an employee requests a respirator; and

(d) Protection for employees performing tasks as specified in WAC 296-155-17609(2).

(2) Respirator selection.

(a) Where respirators are used by WAC 296-155-176 the employer shall select the appropriate respirator or combination of respirators from Table I below.

(b) The employer shall provide a powered, air-purifying respirator in lieu of the respirator specified in Table I whenever:

(i) An employee chooses to use this type of respirator; and

(ii) This respirator will provide adequate protection to the employee.

(c) The employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11.

Table I.—Respiratory Protection for Lead Aerosols

| Airborne concentration of lead or condition of use | Required respirator [a] |
|---|---|
| Not in excess of 500 $\mu g/m^3$ | 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 $\mu g/m^3$ | 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 $\mu g/m^3$ | 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. |
| | Full facepiece self-contained breathing apparatus (SCBA) operated in demand mode. |
| Not in excess of 50,000 $\mu g/m^3$ | 1/2 mask supplied air respirator operated in pressure demand or other positive-pressure mode. |
| Not in excess of 100,000 $\mu g/m$ | 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 $\mu g/m^3$ 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.

(3) Respirator usage.

(a) The employer shall assure that the respirator issued to the employee exhibits minimum facepiece leakage and that the respirator is fitted properly.

(b) Employers shall perform either quantitative or qualitative face fit tests at the time of initial fitting and at least every six months thereafter for each employee wearing negative pressure respirators. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, and shall be conducted in accordance with appendix D, WAC 296-155-17656. The tests shall be used to select facepieces that provide the required protection as prescribed in Table I.

(c) If an employee exhibits difficulty in breathing during the fitting test or during use, the employer shall make available to the employee an examination in accordance with WAC 296-155-17621 (3)(a)(ii) to determine whether the employee can wear a respirator while performing the required duty.

(4) Respirator program.

(a) The employer shall institute a respiratory protection program in accordance with part E, chapter 296-62 WAC.

(b) The employer shall permit each employee who uses a filter respirator to change the filter elements whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.

(c) Employees who wear respirators shall be permitted to leave work areas to wash their face and respirator facepiece whenever necessary to prevent skin irritation associated with respirator use.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17613, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17615 Protective work clothing and equipment.** (1) Provision and use. Where an employee is exposed to lead above the PEL without regard to the use of respirators, where employees are exposed to lead compounds

which may cause skin or eye irritation (e.g., lead arsenate, lead azide), and as protection for employees performing tasks as specified in WAC 296-155-17609(2), 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 such as, but not limited to:

(a) Coveralls or similar full-body work clothing;

(b) Gloves, hats, and shoes or disposable shoe coverlets; and

(c) Face shields, vented goggles, or other appropriate protective equipment which complies with WAC 296-24-078.

(2) Cleaning and replacement.

(a) The employer shall provide the protective clothing required in subsection (1) 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 $\mu g/m^3$ of lead as an 8-hour TWA.

(b) The employer shall provide for the cleaning, laundering, and disposal of protective clothing and equipment required by subsection (1) of this section.

(c) The employer shall repair or replace required protective clothing and equipment as needed to maintain their effectiveness.

(d) The employer shall assure that all protective clothing is removed at the completion of a work shift only in change areas provided for that purpose as prescribed in WAC 296-155-17619(2).

(e) 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 area which prevents dispersion of lead outside the container.

(f) 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.

(g) The employer shall assure that the containers of contaminated protective clothing and equipment required by subdivision (e) of this subsection are labelled 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.

(h) 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.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17615, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17617 Housekeeping.** (1) All surfaces shall be maintained as free as practicable of accumulations of lead.

(2) Clean-up of floors and other surfaces where lead accumulates shall wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of lead becoming airborne.

(3) 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.

(4) Where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters and used and emptied in a manner which minimizes the reentry of lead into the workplace.

(5) Compressed air shall not be used to remove lead from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the airborne dust created by the compressed air.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17617, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17619 Hygiene facilities and practices.** (1) 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.

(2) Change areas.

(a) The employer shall provide clean change areas for employees whose airborne exposure to lead is above the PEL, and as protection for employees performing tasks as specified in WAC 296-155-17609(2), without regard to the use of respirators.

(b) The employer shall assure that change areas are equipped with separate storage facilities for protective work clothing and equipment and for street clothes which prevent cross-contamination.

(c) The employer shall assure that employees do not leave the workplace wearing any protective clothing or equipment that is required to be worn during the work shift.

(3) Showers.

(a) The employer shall provide shower facilities, where feasible, for use by employees whose airborne exposure to lead is above the PEL.

(b) The employer shall assure, where shower facilities are available, that employees shower at the end of the work shift and shall provide an adequate supply of cleansing agents and towels for use by affected employees.

(4) Eating facilities.

(a) The employer shall provide lunchroom facilities or eating areas for employees whose airborne exposure to lead is above the PEL, without regard to the use of respirators.

(b) The employer shall assure that lunchroom facilities or eating areas are as free as practicable from lead contamination and are readily accessible to employees.

(c) The employer shall assure that employees whose 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.

(d) The employer shall assure that employees do not enter lunchroom facilities or eating areas with protective work clothing or equipment unless surface lead dust has been removed by vacuuming, downdraft booth, or other cleaning method that limits dispersion of lead dust.

(5) Hand washing facilities.

(a) The employer shall provide adequate handwashing facilities for use by employees exposed to lead in accordance with WAC 296-155-140.

(b) Where showers are not provided the employer shall assure that employees wash their hands and face at the end of the work-shift.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17619, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17621 Medical surveillance.** (1) General.

(a) The employer shall make available initial medical surveillance to employees occupationally exposed on any day to lead at or above the action level. Initial medical surveillance consists of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels.

(b) The employer shall institute a medical surveillance program in accordance with subsections (2) and (3) of this section for all employees who are or may be exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months;

(c) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician.

(d) The employer shall make available the required medical surveillance including multiple physician review under subsection (3)(c) without cost to employees and at a reasonable time and place.

(2) Biological monitoring.

(a) 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 by subsection (1)(a) and (b) of this section on the following schedule:

(i) For each employee covered by subsection (1)(b) of this section, at least every 2 months for the first 6 months and every 6 months thereafter;

(ii) For each employee covered by subsection (1)(a) or (b) of this section whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl, at least every two months. This frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 µg/dl; and

(iii) For each employee who is removed from exposure to lead due to an elevated blood lead level at least monthly during the removal period.

(b) 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 WAC 296-155-17623 (1)(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.

(c) Accuracy of blood lead level sampling and analysis. Blood lead level sampling and analysis provided pursuant to this WAC 296-155-176 shall have an accuracy (to a confidence level of 95 percent) within plus or minus 15 percent or 6 µg/dl, whichever is greater, and shall be conducted by a laboratory approved by OSHA.

(d) Employee notification.

(i) Within five working days after the receipt of biological monitoring results, the employer shall notify each employee in writing of their blood lead level; and

(ii) The employer shall notify each employee whose blood lead level exceeds 40 µg/dl 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 WAC 296-155-17623 (1)(a).

(3) Medical examinations and consultations.

(a) Frequency. The employer shall make available medical examinations and consultations to each employee covered by subsection (1)(b) of this section on the following schedule:

(i) At least annually for each employee for whom a blood sampling test conducted at any time during the preceding 12 months indicated a blood lead level at or above 40 µg/dl;

(ii) 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, that the employee is pregnant, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use; and

(iii) 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.

(b) Content. The content of medical examinations made available pursuant to subdivision (a)(ii) and (iii) of this subsection shall be determined by an examining physician and, if requested by an employee, shall include pregnancy testing or laboratory evaluation of male fertility. Medical examinations made available pursuant to subdivision (a)(i) of this subsection shall include the following elements:

(i) A detailed work history and a medical history, with particular attention to past lead exposure (occupational and non-occupational), personal habits (smoking, hygiene), and past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological problems;

(ii) 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;

(iii) A blood pressure measurement;

(iv) A blood sample and analysis which determines:

(A) Blood lead level;

(B) Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology;

(C) Zinc protoporphyrin;

(D) Blood urea nitrogen; and,

(E) Serum creatinine;

(v) A routine urinalysis with microscopic examination; and

(vi) Any laboratory or other test relevant to lead exposure which the examining physician deems necessary by sound medical practice.

(c) Multiple physician review mechanism.

(i) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee by WAC 296-155-176, the employee may designate a second physician:

(A) To review any findings, determinations or recommendations of the initial physician; and

(B) To 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 conducts a medical examination or consultation pursuant to WAC 296-155-176. 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:

(A) The employee informing the employer that they intend to seek a second medical opinion; and

(B) The employee 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:

(A) To review any findings, determinations or recommendations of the prior physicians; and

(B) 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.

(v) 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.

(d) Information provided to examining and consulting physicians.

(i) The employer shall provide an initial physician conducting a medical examination or consultation under WAC 296-155-176 with the following information:

(A) A copy of this regulation for lead including all Appendices;

(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 to lead and to any other toxic substance (if applicable);

(D) A description of any personal protective equipment used or to be used;

(E) Prior blood lead determinations; and

(F) All prior written medical opinions concerning the employee in the employer's possession or control.

(ii) The employer shall provide the foregoing information to a second or third physician conducting a medical examination or consultation under WAC 296-155-176 upon request either by the second or third physician, or by the employee.

(e) Written medical opinions.

(i) The employer shall obtain and furnish the employee with a copy of a written medical opinion from each examining or consulting physician which contains only the following information:

(A) 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;

(B) Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead;

(C) 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

(D) The results of the blood lead determinations.

(ii) The employer shall instruct each examining and consulting physician to:

(A) Not reveal either in the written opinion or orally, 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

(B) Advise the employee of any medical condition, occupational or nonoccupational, which dictates further medical examination or treatment.

(f) Alternate physician determination mechanisms. The employer and an employee or authorized employee representative may agree upon the use of any alternate physician determination mechanism in lieu of the multiple physician review mechanism provided by subdivision (c) of this subsection so long as the alternate mechanism is as expeditious and protective as the requirements contained in this section.

(4) Chelation.

(a) 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.

(b) If therapeutic or diagnostic chelation is to be performed by any person in subdivision (a) of this subsection, 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.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17621, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17623 Medical removal protection.** (1) Temporary medical removal and return of an employee.

(a) Temporary removal due to elevated blood lead level. 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 WAC 296-155-176 indicate that the employee's blood lead level is at or above 50 µg/dl; and

(b) Temporary removal due to a final medical determination.

(i) 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.

(ii) For the purposes of WAC 296-155-176, the phrase "final medical determination" means the written medical opinion on the employees' health status by the examining

physician or, where relevant, the outcome of the multiple physician review mechanism or alternate medical determination mechanism used pursuant to the medical surveillance provisions of WAC 296-155-176.

(iii) 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.

(c) Return of the employee to former job status.

(i) The employer shall return an employee to their former job status:

(A) For an employee removed due to a blood lead level at or above 50 µg/dl when two consecutive blood sampling tests indicate that the employee's blood lead level is at or below 40 µg/dl;

(B) 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.

(ii) For the purposes of WAC 296-155-176, the requirement that an employer return an employee to their 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.

(d) 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.

(e) 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 WAC 296-155-176, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:

(i) 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.

(ii) Return. The employer may return the employee to their 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.

(A) If 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;

(B) If 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.

(2) Medical removal protection benefits.

(a) Provision of medical removal protection benefits. The employer shall provide an employee up to eighteen (18) months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to WAC 296-155-176.

(b) Definition of medical removal protection benefits. For the purposes of WAC 296-155-176, the requirement that an employer provide medical removal protection benefits means that, as long as the job the employee was removed from continues, the employer shall maintain the total normal earnings, seniority and other employment rights and benefits of an employee, including the employee's right to their former job status as though the employee had not been medically removed from the employee's job or otherwise medically limited.

(c) Follow-up medical surveillance during the period of employee removal or limitation. During the period of time that an employee is medically removed from their job or otherwise medically 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 WAC 296-155-176.

(d) 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.

(e) 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.

(f) Voluntary removal or restriction of an employee. Where an employer, although not required by WAC 296-155-176 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 subdivisions (a) and (b) of this subsection.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17623, 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 purpose, proper selection, fitting, use, and limitations of respirators;

(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: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17625, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17627 Signs.** (1) General.

(a) The employer may use signs required by other statutes, regulations or ordinances in addition to, or in combination with, signs required by this section.

(b) The employer shall assure that no statement appears on or near any sign required by this section which contradicts or detracts from the meaning of the required sign.

(2) Signs.

(a) The employer shall post the following warning signs in each work area where an employees exposure to lead is above the PEL.

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

(b) The employer shall assure that signs required by this section are illuminated and cleaned as necessary so that the legend is readily visible.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17627, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17629 Recordkeeping.** (1) Exposure assessment.

(a) The employer shall establish and maintain an accurate record of all monitoring and other data used in conducting employee exposure assessments as required in WAC 296-155-17609.

(b) Exposure monitoring records shall include:

(i) The date(s), number, duration, location and results of each of the samples taken if any, including a description of the sampling procedure used to determine representative employee exposure where applicable;

(ii) A description of the sampling and analytical methods used and evidence of their accuracy;

(iii) The type of respiratory protective devices worn, if any;

(iv) 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

(v) The environmental variables that could affect the measurement of employee exposure.

(c) The employer shall maintain monitoring and other exposure assessment records in accordance with the provisions of part B, chapter 296-62 WAC.

(2) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by WAC 296-155-17621.

(b) This record shall include:

(i) The name, social security number, and description of the duties of the employee;

(ii) A copy of the physician's written opinions;

(iii) Results of any airborne exposure monitoring done on or for that employee and provided to the physician; and

(iv) Any employee medical complaints related to exposure to lead.

(c) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(i) A copy of the medical examination results including medical and work history required by WAC 296-155-17621;

(ii) 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;

(iii) A copy of the results of biological monitoring.

(d) The employer shall maintain or assure that the physician maintains medical records in accordance with the provisions of part B, chapter 296-62 WAC.

(3) Medical removals.

(a) The employer shall establish and maintain an accurate record for each employee removed from current exposure to lead pursuant to WAC 296-155-17623.

(b) Each record shall include:

(i) The name and social security number of the employee;

(ii) The date of 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 their former job status;

(iii) A brief explanation of how each removal was or is being accomplished; and

(iv) A statement with respect to each removal indicating whether or not the reason for the removal was an elevated blood lead level.

(c) The employer shall maintain each medical removal record for at least the duration of an employee's employment.

(4) Objective data for exemption from requirement for initial monitoring.

(a) For purposes of WAC 296-155-176, objective data are information demonstrating that a particular product or material containing lead or a specific process, operation, or activity involving lead cannot release dust or fumes in concentrations at or above the action level under any expected conditions of use. Objective data can be obtained from an industry-wide study or from laboratory product test results from manufacturers of lead 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.

(b) The employer shall maintain the record of the objective data relied upon for at least 30 years.

(5) Availability. The employer shall make available upon request all records required to be maintained by this section to affected employees, former employees, and their designated representatives, and to the director for examination and copying.

(6) Transfer of records.

(a) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section.

(b) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records required to be maintained by WAC 296-155-176 for the prescribed period, these records shall be transmitted to the director.

(c) At the expiration of the retention period for the records required to be maintained by WAC 296-155-176, the employer shall notify the director at least 3 months prior to the disposal of such records and shall transmit those records to the director if requested within the period.

(d) The employer shall also comply with any additional requirements involving transfer of records set forth in WAC 296-62-05215.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17629, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17631 Observation of monitoring.** (1) 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 WAC 296-155-17609.

(2) Observation procedures.

(a) 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 equipment, and shall require the observer to comply with all other applicable safety and health procedures.

(b) Without interfering with the monitoring, observers shall be entitled to:

(i) Receive an explanation of the measurement procedures;

(ii) Observe all steps related to the monitoring of lead performed at the place of exposure; and

(iii) Record the results obtained or receive copies of the results when returned by the laboratory.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17631, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17635 Startup dates.** (1) The requirements of WAC 296-155-17607 through 296-155-17631, including administrative controls and feasible work practice controls, but not including engineering controls specified in WAC 296-155-17611(1), shall be complied with as soon as possible, but no later than 60 days from the effective date of WAC 296-155-176.

(2) Feasible engineering controls specified by WAC 296-155-17611(1) shall be implemented as soon as possible, but no later than 120 days from the effective date of WAC 296-155-176.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17635, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17650 Appendix A to WAC 296-155-176—Substance data sheet for occupational exposure to lead.** The information contained in the appendices to WAC 296-155-176 is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation.

(1) 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 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 several different occupations in the construction industry, including demolition or salvage of structures where lead or lead-containing materials are present; removal or encapsulation of lead-containing materials, new construction, alteration, repair, or renovation of structures that contain lead or materials containing lead; installation of products containing lead. In

addition, there are construction related activities where exposure to lead may occur, including transportation, disposal, storage, or containment of lead or materials containing lead on construction sites, and maintenance operations associated with construction activities.

(d) Permissible exposure: The permissible exposure limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air (50 $\mu g/m^3$), averaged over an 8-hour workday.

(e) Action level: The standard establishes an action level of 30 micrograms of lead per cubic meter of air (30 $\mu g/m^3$), averaged over an 8-hour workday. The action level triggers several ancillary provisions of the standard such as exposure monitoring, medical surveillance, and training.

(2) Health hazard data.

(a) Ways in which lead enters your body. 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. 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 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. 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 the blood and other tissues. 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. 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. 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. 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 to kidney dialysis or death is possible. 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. 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. Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that a worker's blood lead level (BLL, also expressed as PbB) be maintained at or below forty micrograms per deciliter of whole blood (40 $\mu g/dl$). The blood lead levels of workers (both male and female workers) who intend to have children should be maintained below 30 $\mu g/dl$ to minimize adverse reproductive health effects to the parents and to the developing fetus. The measurement of your blood lead level (BLL) is the most useful indicator of the amount of lead being absorbed by

your body. Blood lead levels 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. Sometime BLLs are expressed in the form of mg% or μg%. This is a shorthand notation for 100g, 100 ml, or dl. (References to BLL measurements in this standard are expressed in the form of μg/dl.)

BLL 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. BLL 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 BLLs and various diseases. As a result, your BLL is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

Once your blood lead level climbs above 40 μg/dl, your risk of disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular BLL in a given person will cause a particular effect. Studies have associated fatal encephalopathy with BLLs as low as 150 μg/dl. Other studies have shown other forms of diseases in some workers with BLLs well below 80 μg/dl. Your BLL is a crucial indicator of the risks to your health, but one other factor is also extremely important. This factor is the length of time you have had elevated BLLs. The longer you have an elevated BLL, 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. The best way to prevent all forms of lead-related impairments and diseases—both short term and long term—is to maintain your BLL below 40 μg/dl. 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 actions, and seeing that your employer complies with provisions governing employee 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 or 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. The standard contains a procedure whereby you can obtain a second opinion by a physician of your choice if your employer selected the initial physician.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17650, filed 10/29/93, effective 12/10/93.]

**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 $\mu g/m^3$), 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 $\mu g/m^3$.

(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 $\mu g/m^3$ 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 respirators, 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 respirators, 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 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 is not above 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.

Your employer is required to select respirators from the types listed in Table I of the Respiratory Protection section of the standard. Any respirator chosen must be approved by the Mine Safety and Health Administration (MSHA) or the National Institute for Occupational Safety and Health (NIOSH). 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 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 respirators.

Your employer must assure that your respirator facepiece fits properly. Proper fit of a respirator facepiece is critical. Obtaining a proper fit on each employee may require your employer to make available two or three different mask types. In order to assure that your respirator fits properly and that facepiece leakage is minimized, your employer must give you either a qualitative fit test or a quantitative fit test (if you use a negative pressure respirator) in accordance with appendix D. Any respirator which has a filter, cartridge or canister which cleans the work room air before you breathe it and which requires the force of your inhalation to draw air through the filtering element is a negative pressure respirator. A positive pressure respirator supplies air to you directly. A quantitative fit test uses a sophisticated machine to measure the amount, if any, of test material that leaks into the facepiece of your respirator.

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.

Your employer must test the effectiveness of your negative pressure respirator initially and at least every six months thereafter with a "qualitative fit test." In this test, the fit of the facepiece is checked by seeing if you can smell a substance placed outside the respirator. If you can, there is appreciable leakage where the facepiece meets your face.

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 in 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.

(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 $\mu g/m^3$. 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 respirators 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 respirators 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 respirators, 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 exposures 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 non-occupational lead exposure,
- Who exhibit unusual variations in lead absorption rates, or
- Who have specific non-work 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 consisting 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 $\mu g/m^3$ 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 preassignment 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. Preassignment 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 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.

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 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.

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 respirators, 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 µg/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, 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.

(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 (206) 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: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17652, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17654 Appendix C to WAC 296-155-176—Medical surveillance guidelines.** (1) Introduction.

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 lead in construction is designed to protect workers exposed to inorganic lead including metallic lead, all inorganic lead compounds and organic lead soaps.

Under this standard occupational exposure to inorganic lead is to be limited to 50 $\mu g/m^3$ (micrograms per cubic meter) based on an 8 hour time-weighted average (TWA). This permissible exposure limit (PEL) must be achieved through a combination of engineering, work practice and administrative controls to the extent feasible. Where these controls are in place but are found not to reduce employee exposures to or below the PEL, they must be used nonetheless, and supplemented with respirators to meet the 50 $\mu g/m^3$ exposure limit.

The standard also provides for a program of biological monitoring for employees exposed to lead above the action level at any time, and additional medical surveillance for all employees exposed to levels of inorganic lead above 30 $\mu g/m^3$ (TWA) for more than 30 days per year and whose BLL exceeds 40 $\mu g/dl$.

The purpose of this document is to outline the medical surveillance provisions of the standard for inorganic lead in construction, and to provide further information to the physician regarding the examination and evaluation of workers exposed to inorganic lead.

Subsection (2) 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 subsection.

Subsection (3) 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.

Subsection (4) 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 subsection (3).

Subsection (5) 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.

(2) Medical surveillance and monitoring requirements for workers exposed to inorganic lead.

Under the standard for inorganic lead in the construction industry, initial medical surveillance consisting of biological monitoring to include blood lead and ZPP level determination shall be provided to employees exposed to lead at or above the action level on any one day. In addition, a program of biological monitoring is to be made available to all employees exposed above the action level at any time and additional medical surveillance is to be made available to all employees exposed to lead above 30 μg/m$^3$ TWA for more than 30 days each year and whose BLL exceeds 40 μg/dl. 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.

Under this program, the blood lead level (BLL) of all employees who are exposed to lead above 30 μg/m$^3$ for more than 30 days per year or whose blood lead is above 40 μg/dl but exposed for no more than 30 days per year is to be determined at least every two months for the first six months of exposure and every six months thereafter. The frequency is increased to every two months for employees whose last blood lead level was 40 μg/dl or above. For employees who are removed from exposure to lead due to an elevated blood lead, a new blood lead level must be measured monthly. A zinc protoporphyrin (ZPP) measurement is strongly recommended on each occasion that a blood lead level measurement is made.

An annual medical examination and consultation performed under the guidelines discussed in subsection (4) is to be made available to each employee exposed above 30 μg/m$^3$ for more than 30 days per year for whom a blood test conducted at any time during the preceding 12 months indicated a blood lead level at or above 40 μg/dl. 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 30 μg/m$^3$ for more than 30 days per year. 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.

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 protection (MRP) program. The object of the MRP program is to provide temporary medical removal to workers either with substantially elevated blood lead levels or otherwise at risk of sustaining material health impairment from continued substantial exposure to lead.

Under the standard's ultimate worker removal criteria, a worker is to be removed from any work having an eight hour TWA exposure to lead of 30 μg/m$^3$ when their blood lead level reaches 50 μg/dl and is confirmed by a second follow-up blood lead level performed within two weeks after the employer receives the results of the first blood sampling test. Return of the employee to their job status depends on a worker's blood lead level declining to 40 μg/dl.

As part of the standard, the employer is required to notify in writing each employee whose blood lead level exceeds 40 μg/dl. 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 limit.

In addition to the above blood lead level criterion, 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 a 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 30 μg/m$^3$. 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 raise 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 their 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 special measures are no longer needed.

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 had not been removed) for a period of up to 18 months or for as long as the job the employee was removed from lasts if less than 18 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 workplace. The provisions of MRP benefits during the employee's removal period may, however, be conditioned upon participation in medical surveillance.

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, they can make an appointment with a physician of their 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.

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 or anticipated 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 physicians'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.

Employers must instruct each physician not to reveal to the employer in writing or in any other way their 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 non-occupationally related medical condition requiring further treatment or evaluation.

The standard provides for the use of respirators where engineering and other primary controls are not effective. 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 controls are inadequate by providing supplementary, 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.

In its standard on occupational exposure to inorganic lead in the construction industry, 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. 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 test 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.

Employers are required to assure that accurate records are maintained on exposure assessment, including environmental monitoring, medical surveillance, and medical removal for each employee. Exposure assessment records must be kept for at least 30 years. Medical surveillance records must be kept for the duration of employment plus 30 years except in cases where the employment was less than one year. If duration of employment is less than one year, the employer need not retain this record beyond the term of employment if the record is provided to the employee upon termination of employment. Medical removal records also must be maintained for the duration of employment. All records required under the standard must be made available upon request to the director. 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.

In addition, the standard requires that the employer inform all workers exposed to lead at or above 30 $\mu g/m^3$ 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.

(3) Adverse health effects of inorganic lead.

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 µg/dl and second, the blood lead levels of workers, male or female, who intend to parent in the near future should be maintained below 30 µg/dl to minimize adverse reproductive health effects to the parents 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.

The spectrum of health effects caused by lead exposure can be subdivided into five developmental stages: 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.

(a) Heme synthesis inhibition. 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 µg/dl. At a blood lead level of 40 µg/dl, more than 20% of the population would have 70% inhibition of ALA-D. There is an exponential increase in ALA excretion at blood lead levels greater than 40 µg/dl.

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 µg/dl or greater, nearly 100% of the population will have an increase in FEP. There is also an exponential relationship between blood lead levels greater than 40 µg/dl and the associated ZPP level, which has led to the development of the ZPP screening test for lead exposure.

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.

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 µg/dl 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 µg/dl. Inhibited hemoglobin synthesis is more common in chronic cases whereas shortened erythrocyte life span is more common in acute cases.

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.

(b) Neurological effects. Inorganic lead has been found to have toxic effects on both the central and peripheral nervous systems. The earliest stages 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.

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.

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 µg/dl whole blood and therefore recommend a 40 µg/dl 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.

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 µg/dl is manifested by slowing of 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 fingers and hand in the most active upper extremity, followed in severe cases by wrist drop or, much less commonly, foot drop.

In addition to slowing of nerve conduction, electromyographical studies in patients with blood lead levels greater than 50 µg/dl 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 fasciculations. Whether these effects occur at levels of 40 µg/dl is undetermined.

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.

(c) Gastrointestinal. Lead may also affect 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 µg/dl.

(d) Renal. 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 function remains 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.

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.

(e) Reproductive effects. 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 all occur. Teratospermia has been noted at mean blood lead levels of 53 µg/dl and hypospermia and asthenospermia at 41 µg/dl. Furthermore, there appears to be a dose-response relationship for teratospermia in lead exposed workers.

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.

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.

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.

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.

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/dl in children can cause significant neurobehavioral impairments and there is evidence of hyperactivity at blood levels as low as 25 µg/dl. 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/dl with a population mean of 15 µg/dl. Blood lead levels in the fetus and newborn likewise should not exceed 30 µg/dl.

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 the male and female as well as the risk of genetic damage of lead on both the ovum and sperm, WISHA recommends a 30 µg/dl maximum permissible blood lead level in both males and females who wish to bear children.

(f) Other toxic effects. 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 kidney or if some other mechanism is involved. 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.

(4) Medical evaluation.

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 (3), lead can affect numerous organ systems and produce a wide array of signs and symptoms, most of which are non-specific 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.

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 many occupations in the construction industry, including demolition and salvaging operations, removal or encapsulation of materials containing lead, construction, alteration, repair or renovation of structures containing lead, transportation, disposal, storage or containment of lead or lead-containing materials on construction sites, and maintenance operations associated with construction activities.

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.

A complete and detailed work history is important in the initial evaluation. A listing of all previous employment with information on job description, exposure to fumes or dust, known exposures to lead or other toxic substances, a description of any personal protective equipment 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.

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 non-occupational 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.

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 disturbances or decreased visual acuity, hearing deficits or tinnitus, pigmentation of the oral mucosa, or metallic taste in mouth.
- Cardio-pulmonary—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, disturbances in gait, difficulty in climbing stairs, or seizures.
- Hematologic—pallor, easy fatigability, abnormal blood loss, melena.
- Reproductive (male and female and spouse where relevant)—history of infertility, impotence, loss of libido, abnormal menstrual periods, history of miscarriages, stillbirths, or children with birth defects.
- Musculo-skeletal—muscle and joint pains.

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.

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.

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.

Cranial nerve evaluation should also be included in the routine examination.

The abdominal examination should include auscultation for bowel sounds and abdominal bruits and palpation for organomegaly, masses, and diffuse abdominal tenderness.

Cardiovascular examination should evaluate possible early signs of congestive heart failure. Pulmonary status should be addressed particularly if respirator protection is contemplated.

As part of the medical evaluation, the lead standard requires the following laboratory studies:

- Blood lead level.
- Hemoglobin and hematocrit determinations, red cell indices, and examination of the peripheral blood smear to evaluate red blood cell morphology.
- Blood urea nitrogen.
- Serum creatinine.
- Routine urinalysis with microscopic examination.
- A zinc protoporphyrin level.

In addition to the above, the physician is authorized to order any further laboratory or other tests which they deem 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. 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.

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.

If a peripheral neuropathy is suspected, nerve conduction studies are warranted both for diagnosis and as a basis to monitor any therapy.

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.

An electrocardiogram and chest x-ray may be obtained as deemed appropriate.

Sophisticated and highly specialized testing should not be done routinely and where indicated should be under the direction of a specialist.

(5) Laboratory evaluation.

The blood lead 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.

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.

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% 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, kidney, 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 body 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.

Also due to its correlation with recent exposures, the blood lead level may vary considerably over short time intervals.

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 blood containers and analyzed by a reliable laboratory. Under the standard, samples must be analyzed in laboratories which are approved by OSHA. 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.

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.

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 3 to 4 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.

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 the place of the iron, forming ZPP.

An elevation in the level of circulating ZPP may occur at blood lead levels as low as 20-30 µg/dl in some workers. Once the blood lead level has reached 40 µg/dl there is more marked rise in the ZPP value from its normal range of less than 100 µg/dl 100 ml. Increases in blood lead levels beyond 40 µg/100 g are associated with exponential increases in ZPP.

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 life-span. Therefore, the ZPP level in blood reflects the average ZPP production over the previous 3-4 months and consequently the average lead exposure during that time interval.

It is recommended that a hematocrit be determined whenever a confirmed ZPP of 50 µg/100 ml whole blood is obtained to rule out a significant underlying anemia. If the ZPP is in excess of 100 µg/100 ml and not associated with abnormal elevations in blood lead levels, the laboratory should be checked to be sure that 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 an OSHA 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.

ZPP has a characteristic fluorescence spectrum with a peak at 594 nm 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.

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 subsection (3) 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.

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.

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 µg/l 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.

Summary. The Washington Industrial Safety and Health Act's standard for inorganic lead in the construction industry places significant emphasis on the medical surveillance of all workers exposed to levels of inorganic lead above 30 µg/m$^3$ TWA. The physician has a fundamental role in this surveillance program, and in the operation of the medical removal protection program.

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.

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. Finally, the appropriate laboratory testing for evaluating lead exposure and toxicity is presented.

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 their care.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17654, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-17656 Appendix D to WAC 296-155-176—Qualitative and quantitative fit test protocols.** Fit test protocols.

(1) Definitions.

(a) Quantitative fit test. The test is performed in a test chamber. The normal air-purifying element of the respirator is replaced by a high-efficiency particulate air (HEPA) filter in the case of particulate QNFT aerosols or a sorbent offering contaminant penetration protection equivalent to high-efficiency filters where the QNFT test agent is a gas or vapor.

(b) Challenge agent means the aerosol, gas or vapor introduced into a test chamber so that its concentration inside and outside the respirator may be measured.

(c) Test subject means the person wearing the respirator for quantitative fit testing.

(d) Normal standing position means standing erect and straight with arms down along the sides and looking straight ahead.

(e) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.

(f) Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers which calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.

(g) "Fit Factor" means the ration of challenge agent concentration outside with respect to the inside of a respirator inlet covering (facepiece or enclosure).

(2) General: The employer shall include the following provisions in the fit test procedures. These provisions apply to both qualitative fit testing (QLFT) and quantitative fit testing (QNFT) permissible for compliance with WAC 296-155-17613 (3)(b). All testing shall be conducted annually.

(a) The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. The selection shall include at least three sizes of elastomeric facepieces of the type of respirator that is to be tested, i.e., three sizes of half mask; or three sizes of full facepiece. Respirators of each size must be provided from at least two manufacturers.

(b) Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a comfortable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning the respirator. This instruction may not constitute the subject's formal training on respirator use, as it is only a review.

(c) The test subject shall be informed they are being asked to select the respirator which provides the most comfortable fit. Each respirator represents a different size and shape, and if fitted, maintained and used properly, will provide adequate protection.

(d) The test subject shall be instructed to hold each facepiece up to the face and eliminate those which obviously do not give a comfortable fit.

(e) The more comfortable facepieces are noted; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in item 6 below. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

(f) Assessment of comfort shall include reviewing the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:

(i) Position of the mask on the nose;

(ii) Room for eye protection;

(iii) Room to talk; and

(iv) Position of mask on face and cheeks.

(g) The following criteria shall be used to help determine the adequacy of the respirator fit:

(i) Chin properly placed;

(ii) Adequate strap tension, not overly tightened;

(iii) Fit across nose bridge;

(iv) Respirator of proper size to span distance from nose to chin;

(v) Tendency of respirator to slip; and

(vi) Self-observation in mirror to evaluate fit and respirator position.

(h) The test subject shall conduct the negative and positive pressure fit checks as described below or in ANSI Z88.2-1980. Before conducting the negative or positive pressure test, the subject shall 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 shall be selected and retested if the test subject fails the fit check tests.

(i) Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

(ii) 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 facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

(i) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, or long sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

(j) If a test subject exhibits difficulty in breathing during the tests, they shall be referred to a physician to determine whether the test subject can wear a respirator while performing their duties.

(k) If at any time within the first two week of use the respirator becomes uncomfortable, the test subject shall be given the opportunity to select a different facepiece and to be retested.

(l) The employer shall maintain a record of the fit test administered to an employee. The record shall contain at least the following information:

(i) Name of employee;

(ii) Type of respirator;

(iii) Brand, size of respirator;

(iv) Date of test;

(v) Where QNFT is used: The fit factor, strip chart recording or other recording of the results of the test. The record shall be maintained until the next fit test is administered.

(m) Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

(n) Test exercises. The test subject shall perform exercises, in the test environment, in the manner described below:

(i) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(ii) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as to not hyperventilate.

(iii) Turning head side to side. Standing in place, the subject shall slowly turn their head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(iv) Moving head up and down. Standing in place, the subject shall slowly move their head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(v) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage (see below), 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.

(vi) Grimace. The test subject shall grimace by smiling or frowning.

(vii) Bending over. The test subject shall bend at the waist as if they were to touch their toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT units which prohibit bending at the waist.

(viii) Normal breathing. Same as exercise 1. Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become uncomfortable, another model of respirator shall be tried.

(3) Qualitative fit test (QLFT) protocols.

(a) General.

(i) The employer shall assign specific individuals who shall assume full responsibility for implementing the respirator qualitative fit test program.

(ii) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and assure that test equipment is in proper working order.

(iii) The employer shall assure that QLFT equipment is kept clean and well maintained so as to operate at the parameters for which it was designed.

(b) Isoamyl acetate protocol.

(i) Odor threshold screening. The odor threshold screening test, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate.

(A) Three 1 liter glass jars with metal lids are required.

(B) Odor free water (e.g., distilled or spring water) at approximately 25 degrees C shall be used for the solutions.

(C) The isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution is prepared by adding 1 cc of pure IAA to 800 cc of odor free water in a 1 liter jar and shaking for 30 seconds. A new solution shall be prepared at least weekly.

(D) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated but shall not be connected to the same recirculating ventilation system.

(E) The odor test solution is prepared in a second jar by placing 0.4 cc of the stock solution into 500 cc of odor free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

(F) A test blank shall be prepared in a third jar by adding 500 cc of odor free water.

(G) The odor test and test blank jars shall be labeled 1 and 2 for jar identification. Labels shall be placed on the lids so they can be periodically peeled, dried off and switched to maintain the integrity of the test.

(H) The following instruction shall be typed on a card and placed 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."

(I) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(J) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

(K) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(ii) Isoamyl acetate fit test.

(A) The fit test chamber shall be similar to 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 test subject's head. The inside top center of the chamber shall have a small hook attached.

(B) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors. The cartridges or masks shall be changed at least weekly.

(C) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(D) A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

(E) Upon entering the test chamber, the test subject shall be given 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 cc of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber.

(F) 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 test subject; to explain the fit test, the importance of their cooperation, and the purpose for the head exercises; or to demonstrate some of the exercises.

(G) If at any time during the test, the subject detects the banana like odor of IAA, the test has failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(H) If the test has failed, the subject shall return to the selection room and remove the respirator, repeat the odor sensitivity test, select and put on another respirator, return to the test chamber and again begin the procedure described in subitems (A) through (G) of this item. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait about 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(I) When a respirator is found that passes the test, its efficiency shall be demonstrated for the subject by having the subject break the face seal and take a breath before exiting the chamber.

(J) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test. To keep the test area from becoming contaminated, the used towels shall be kept in a self sealing bag so there is no significant IAA concentration build-up in the test chamber during subsequent tests.

(c) Saccharin solution aerosol protocol. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(i) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(A) During threshold screening as well as during fit testing, subjects shall wear an enclosure about 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 (R) FT 14 and (R) FT 15 combined, is adequate.

(B) The test enclosure shall have a 3/4 inch hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(C) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through their wide open mouth with tongue extended.

(D) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer the test conductor shall spray the threshold check solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(E) The threshold check solution consists of 0.83 grams of sodium saccharin USP in 100 cc of warm water. It can be prepared by putting 1 cc of the fit test solution (see (ii)(E) below) in 100 cc of distilled water.

(F) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(G) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted.

(H) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted.

(I) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted.

(J) The test conductor will take note of the number of squeezes required to solicit a taste response.

(K) If the saccharin is not tasted after 30 squeezes (step 10), the test subject may not perform the saccharin fit test.

(L) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(M) Correct use of the nebulizer means that approximately 1 cc of liquid is used at a time in the nebulizer body.

(N) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(ii) Saccharin solution aerosol fit test procedure.

(A) The test subject may not eat, drink (except plain water), or chew gum for 15 minutes before the test.

(B) The fit test uses the same enclosure described in subdivision (c)(i) of this subsection.

(C) The test subject shall don the enclosure while wearing the respirator selected in subdivision (c)(i) of this subsection. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(D) A second DeVilbiss Model 40 Inhalation Medication Nebulizer is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(E) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 cc of warm water.

(F) As before, the test subject shall breathe through the wide open mouth with tongue extended.

(G) The nebulizer is inserted into the hole in the front of the enclosure and the fit test solution is sprayed into the enclosure using the same number of squeezes required to elicit a taste response in the screening test.

(H) After generating the aerosol the test subject shall be instructed to perform the exercises in subsection (2)(n) of this section.

(I) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes as initially.

(J) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected.

(K) If the taste of saccharin is detected, the fit is deemed unsatisfactory and a different respirator shall be tried.

(L) Successful completion of the test protocol shall allow the use of the tested respirator in contaminated atmospheres up to 10 times the PEL. In other words, this protocol may be used for assigned protection factors no higher than 10.

(d) Irritant fume protocol.

(i) The respirator to be tested shall be equipped with high-efficiency particulate air (HEPA) filters.

(ii) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its characteristic odor.

(iii) Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA part No. 5645, or equivalent. Attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute.

(iv) Advise the test subject that the smoke can be irritating to the eyes and instruct the subject to keep their eyes closed while the test is performed.

(v) The test conductor shall direct the stream of irritant smoke from the smoke tube towards the face seal area of the test subject. They shall begin at least 12 inches from the facepiece and gradually move to within one inch, moving around the whole perimeter of the mask.

(vi) The exercises identified in subsection (2)(n) of this section above shall be performed by the test subject while the respirator seal is being challenged by the smoke.

(vii) Each test subject passing the smoke test without evidence of a response shall be given a sensitivity check of the smoke from the same tube once the respirator has been removed to determine whether their reactions to the smoke. Failure to evoke a response shall void the fit test.

(viii) The fit test shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agent.

(4) Quantitative fit test (QNFT) protocol.

(a) General.

(i) The employer shall assign specific individuals who shall assume full responsibility for implementing the respirator quantitative fit test program.

(ii) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and assure that test equipment is in proper working order.

(iii) The employer shall assure that QNFT equipment is kept clean and well maintained so as to operate at the parameters for which it was designed.

(b) Apparatus.

(i) Instrumentation. Aerosol generation, dilution, and measurement systems using corn oil or sodium chloride as test aerosols shall be used for quantitative fit testing.

(ii) Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the challenge agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the challenge agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(iii) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high-efficiency particulate filter supplied by the same manufacturer.

(iv) The sampling instrument shall be selected so that a strip chart record may be made of the test showing the rise and fall of the challenge agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers which 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.

(v) The combination of substitute air-purifying elements, challenge agent and challenge agent concentration in the test chamber shall be such that the test subject is not exposed in excess of an established exposure limit for the challenge agent at any time during the testing process.

(vi) The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times and so that there is no interference with the fit or performance of the respirator.

(vii) The test chamber and test set up shall permit the person administering the test to observe the test subject inside the chamber during the test.

(viii) The equipment generating the challenge atmosphere shall maintain the concentration of challenge agent inside the test chamber constant to within a 10 percent variation for the duration of the test.

(ix) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event inside the test chamber and its being recorded.

(x) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.

(xi) The exhaust flow from the test chamber shall pass through a high-efficiency filter before release.

(xii) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(xiii) The limitations of instrument detection shall be taken into account when determining the fit factor.

(xiv) Test respirators shall be maintained in proper working order and inspected for deficiencies such as cracks, missing valves and gaskets, etc.

(c) Procedural requirements.

(i) When performing the initial positive or negative pressure test the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these tests.

(ii) An abbreviated screening isoamyl acetate test or irritant fume test may be utilized in order to quickly identify poor fitting respirators which passed the positive and/or negative pressure test and thus reduce the amount of QNFT time. When performing a screening isoamyl acetate test, combination high-efficiency organic vapor cartridges/canisters shall be used.

(iii) A reasonably stable challenge agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain type of test units the determination of the challenge agent stability may be established after the test subject has entered the test environment.

(iv) Immediately after the subject enters the test chamber, the challenge agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.

(v) A stable challenge concentration shall be obtained prior to the actual start of testing.

(vi) Respirator restraining straps shall not be overtightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonable comfortable fit typical of normal use.

(vii) The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested. If two of the three required tests are terminated, the fit shall be deemed inadequate.

(viii) In order to successfully complete a QNFT, three successful fit tests are required. The results of each of the three independent fit tests must exceed the minimum fit factor needed for the class of respirator (e.g., half mask respirator, full facepiece respirator).

(ix) Calculation of fit factors.

(A) The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration inside the respirator.

(B) The average test chamber concentration is the arithmetic average of the test chamber concentration at the beginning and of the end of the test.

(C) The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:

(I) Average peak concentration.

(II) Maximum peak concentration.

(III) Integration by calculation of the area under the individual peak for each exercise. This includes computerized integration.

(x) Interpretation of test results. The fit factor established by the quantitative fit testing shall be the lowest of the three fit factor values calculated from the three required fit tests.

(xi) The test subject shall not be permitted to wear a half mask, or full facepiece respirator unless a minimum fit factor equivalent to at least 10 times the hazardous exposure level is obtained.

(xii) Filters used for quantitative fit testing shall be replaced at least weekly, or whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media. Organic vapor cartridges/canisters shall be replaced daily (when used) or sooner if there is any indication of breakthrough by a test agent.

[Statutory Authority: Chapter 49.17 RCW. 93-22-054 (Order 93-07), § 296-155-17656, filed 10/29/93, effective 12/10/93.]

**WAC 296-155-24510 Fall restraint, fall arrest systems.** (1) When employees are exposed to a hazard of falling from a location 10 feet or more in height, the employer shall ensure that fall restraint or fall arrest systems

are provided, installed, and implemented according to the following requirements.

(2) Fall restraint protection shall consist of:

(a) Standard guardrails as described in chapter 296-155 WAC Part K.

(b) Safety belts and/or harness attached to securely rigged restraint lines.

(i) Safety belts and/or harness shall conform to ANSI Standard:

Class I - body belt

Class II - chest harness

Class III - full body harness

Class IV - suspension/position belt

(ii) All safety belt and lanyard hardware assemblies shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.

(iii) Rope grab devices are prohibited for fall restraint applications unless they are part of a fall restraint system designed specifically for the purpose by the manufacturer, and used in strict accordance with the manufacturer's recommendations and instructions.

(iv) The employer shall ensure component compatibility.

(v) Components of fall restraint systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected.

(vi) Anchorage points used for fall restraint shall be capable of supporting 4 time the intended load.

(vii) Restraint protection shall be rigged to allow the movement of employees only as far as the sides and edges of the walking/working surface.

(c) A warning line system as prescribed in the WAC 296-155-24515(3) and supplemented by the use of a safety monitor system as prescribed in WAC 296-155-24521 to protect worker engaged in duties between the forward edge of the warning line and the unprotected sides and edges, including the leading edge, of a low pitched roof or walking/working surface.

(d) Warning line and safety monitor systems as described in WAC 296-155-24515 (3) through (4)(f) and 296-155-24520 respectively are prohibited on surfaces exceeding a 4 in 12 pitch, and on any surface whose dimensions are less than 45 inches in all directions.

(3) Fall arrest protection shall consist of:

(a) Full body harness.

(i) An approved Class III full body harness shall be used.

(ii) Body harness system or components subject to impact loading shall be immediately removed from service and shall not be used again for employee protection unless inspected and determined by a competent person to be undamaged and suitable for reuse.

(iii) All safety lines and lanyards shall be protected against being cut or abraded.

(iv) Body harness system shall be rigged to minimize free fall distance with a maximum free fall distance allowed of 6 feet, and such that the employee will not contact any lower level.

(v) Hardware shall be drop forged, pressed or formed steel, or made of materials equivalent in strength.

(vi) Hardware shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to the attached body harness or lanyard.

(vii) When vertical lifelines (droplines) are used, not more than one employee shall be attached to any one lifeline.

(viii) Full body harness systems shall be secured to anchorages capable of supporting 5,000 pounds per employee except: When self-retracting lifelines or other deceleration devices are used which limit free fall to two feet, anchorages shall be capable of withstanding 3,000 pounds.

(ix) Vertical lifelines (droplines) shall have a minimum tensile strength of 5,000 pounds (22.2kN), except that self-retracting lifelines and lanyards which automatically limit free fall distance to two feet (.61 m) or less shall have a minimum tensile strength of 3,000 pounds (13.3 kN).

(x) Horizontal lifelines shall have a tensile strength capable of supporting a fall impact load of at least 5,000 pounds (22.2 kN) per employee using the lifeline, applied anywhere along the lifeline.

(xi) Lanyards shall have a minimum tensile strength of 5,000 pounds (22.2 kN).

(xii) All components of body harness systems whose strength is not otherwise specified in subsection (3) of this section shall be capable of supporting a minimum fall impact load of 5,000 pounds (22.2 kN) applied at the lanyard point of connection.

(xiii) Snap-hooks shall not be connected to loops made in webbing-type lanyards.

(xiv) Snap-hooks shall not be connected to each other.

(xv) Not more than one snap-hook shall be connected to any one D-ring unless they are the double locking type.

(xvi) Full body harness systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected.

(b) Safety nets.

(i) All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers, and shall bear a label of proof test.

(ii) Forged steel safety hooks or shackles shall be used to fasten the net to its supports.

(iii) Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 10 feet below such level.

(iv) Safety nets shall extend outward at least 8 feet from the outermost projection of the work surface.

(v) Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified in subsection (3)(b)(vii) of this section.

(vi) Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test specified in subsection (3)(b)(vii) of this section.

(vii) Safety nets and safety net installations shall be drop-tested at the jobsite before used as a fall protection

system. The drop-test shall consist of a 400 pound (180 kg) bag of sand 30+2 inches (76+5 cm) in diameter dropped into the net from the highest walking/working surface on which employees are to be protected. Exception: When the employer can demonstrate that a drop-test is not feasible or practicable, the net and net installation shall be certified by a qualified person to be in compliance with the provisions of this section.

(viii) Safety nets shall be inspected weekly for mildew, wear, damage, and other deterioration, and defective components shall be removed from service.

(ix) Materials, scrap pieces, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift.

(x) The maximum size of each safety net mesh opening shall not exceed 36 square inches (230 cm2) nor be longer than six inches (15 cm) on any side measured center-to-center of mesh ropes or webbing. All mesh crossing shall be secured to prevent enlargement of the mesh opening.

(xi) Each safety net (or section of it) shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds (22.2 kN).

(xii) Connections between the safety net panels shall be as strong as integral net components and shall be spaced not more than six inches (15 cm) apart.

(c) Catch platforms.

(i) A catch platform shall be installed within 10 vertical feet of the work area.

(ii) The catch platforms width shall equal the distance of the fall but shall be a minimum of 45 inches wide and shall be equipped with standard guardrails on all open sides.

(4) Droplines or lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7/8-inch wire core manila rope. For all other lifeline applications, a minimum of 3/4-inch manila or equivalent, with a minimum breaking strength of 5,000 pounds, shall be used.

(5) Safety harnesses, lanyards, lifelines or droplines, independently attached or attended, shall be used while performing the following types of work when other equivalent type protection is not provided:

(a) Work in hoppers, bins, silos, tanks, or other confined spaces as described in chapter 296-62 WAC Part M.

(b) Work on hazardous slopes, or dismantling safety nets, working on poles or from boatswains chairs at elevations greater than six feet (1.83 m), swinging scaffolds or other unguarded locations.

(c) Work on skips and platforms used in shafts by crews when the skip or cage does not occlude the opening to within one foot (30.5 cm) of the sides of the shaft, unless cages are provided.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-24510, filed 9/22/93, effective 11/1/93; 91-24-017 (Order 91-07), § 296-155-24510, filed 11/22/91, effective 12/24/91; 91-03-044 (Order 90-18), § 296-155-24510, filed 1/10/91, effective 2/12/91.]

**WAC 296-155-300 Accident prevention signs and tags.** (1) General. Signs and symbols required by this section shall be visible at all times when work is being performed, and shall be removed or covered promptly when the hazards no longer exist.

(2) Danger signs.

(a) Danger signs (see Figure E-1) shall be used only where an immediate hazard exists.

(b) Danger signs shall have red as the predominating color for the upper panel; black outline on the boarders; and a white lower panel for additional sign wording.

(3) Caution signs.

(a) Caution signs (see Figure E-2) shall be used only to warn against potential hazards or to caution against unsafe practices.

(b) Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording.

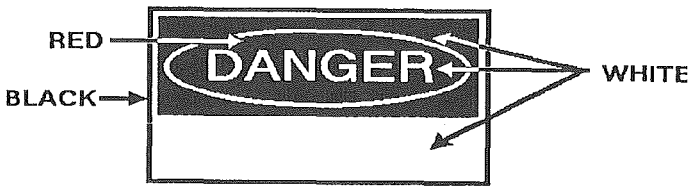



FIGURE E-1

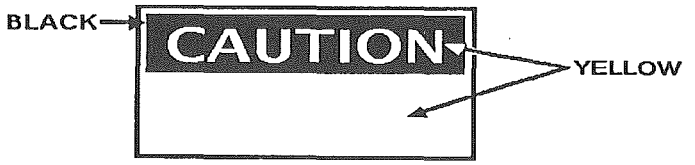



FIGURE E-2

(4) Exit signs.

(a) Every exit sign shall have the word "exit" in plainly legible letters not less than 6 inches high, with the principal strokes of letters not less than three-fourths-inch wide.

(b) Every exit sign shall be distinctive in color and shall provide contrast with decorations, interior finish, or other signs.

(5) Safety instruction signs. Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background.

(6) Directional signs. Directional signs, other than automotive traffic signs specified in subsection (7) of this section, shall be white with a black panel and a white directional symbol. Any additional wording on the sign shall be black letters on the white background.

(7) Traffic signs.

(a) Construction areas shall be posted with legible traffic signs at points of hazard.

(b) All traffic control signs or devices used for protection of construction workers shall conform to and be set up according to American National Standards Institute D6.1-1988, Manual on Uniform Traffic Control Devices for Streets and Highways as amended by the Washington state department of transportation (M24-OT (HT)).

(8) Accident prevention tags.

(a) Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They shall not be used in place of, or as a substitute for, accident prevention signs.

(b) Specifications for accident prevention tags similar to those in Table E-1 shall apply.

(i) Additional rules. American National Standards Institute (ANSI) Z35.1-1972, Specifications for Accident Prevention signs, and Z35.2-1968, Specifications for Accident Prevention Tags, contain rules which are additional to the rules prescribed in this section. The employer shall comply with ANSI Z35.1-1972 and Z35.2-1968 with respect to rules not specifically prescribed in this part.

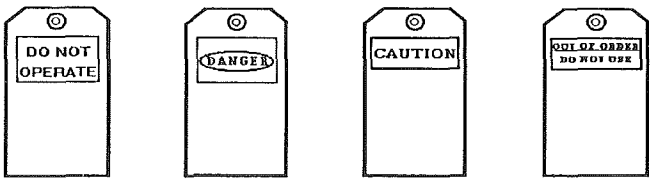



TABLE E-1

| White tag- White letters on red square | White tag- White letters on red oval with a black square | Yellow tag- Yellow letters on a black background | White tag- White letters on black background |
|---|---|---|---|

| Basic Stock (Background) | Safety Colors (Ink) | Copy Specification (Letters) |
|---|---|---|
| White | Red | Do Not Operate |
| White | Black and Red | Danger |
| Yellow | Black | Caution |
| White | Black | Out of Order- Do Not Use |

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-300, filed 9/22/93, effective 11/1/93; 93-01-067 (Order 92-15), § 296-155-300, filed 12/11/92, effective 1/15/93. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-300, filed 1/21/86; Order 74-26, § 296-155-300, filed 5/7/74, effective 6/6/74.]

**WAC 296-155-305 Signaling.** Flaggers.

(1) When operations are such that signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flaggers or other appropriate traffic controls shall be provided.

(2) Signaling directions by flaggers shall conform to American National Standards Institute D6.1-1988, Manual on Uniform Traffic Control Devices for Streets and Highways, as amended by the Washington state department of transportation. (M24-01 (HT).)

(3) Hand signaling by flaggers shall be by use of sign paddles at least 18 inches in diameter with series "C" letters at least 6 inches high or lights approved by the transportation commission. When hand signaling is done in periods of darkness, the sign paddles must be reflectorized or illuminated as required by ANSI D6.1-1988, Manual on Uniform Traffic Control Devices. The "STOP" side of the paddle shall have a red background with white lettering. When a paddle has a "SLOW" side, the background shall be orange and the lettering black. Colors shall conform to ANSI D6.1 current edition.

(4) Flaggers shall wear an orange warning garment and a yellow protective helmet while flagging. Warning garments worn at night shall be of reflectorized material. Yellow is specified as the color of helmets; the issue is clearly one of high visibility. Other colors providing equal visibility than the specified yellow will be acceptable. The iridescent or reflectorized hard hats, available in several colors, which provide "high visibility" in both day and night applications, will meet standard specifications.

(5) Each flagger shall be trained every three years in accordance with the American National Standards Institute (ANSI) D6.1-1988 Manual on Uniform Traffic Control Devices as amended by the Washington state department of transportation (M 24-01 (HT)).

Note: Personnel that have not completed a flagging course may be assigned duties as flaggers only during emergencies when a sudden, generally unexpected, set of circumstances demands immediate attention.

(6) Each flagger shall have in their possession a valid certificate which verifies completion of the training prescribed in subsection (5) of this section. Each certificate shall contain the date the card expires.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-305, filed 9/22/93, effective 11/1/93; 93-01-067 (Order 92-15), § 296-155-305, filed 12/11/92, effective 1/15/93; 89-11-035 (Order 89-03), § 296-155-305, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-305, filed 1/21/86; Order 76-6, § 296-155-305, filed 3/1/76; Order 74-26, § 296-155-305, filed 5/7/74, effective 6/6/74.]

**WAC 296-155-310 Barricades.** Barricades for protection of employees shall conform to the portions of the American National Standards Institute D6.1-1988, Manual on Uniform Traffic Control Devices for Streets and Highways, as amended by the Washington state department of highways, (M24-01 (HT)), relating to barricades.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-310, filed 9/22/93, effective 11/1/93; Order 74-26, § 296-155-310, filed 5/7/74, effective 6/6/74.]

**WAC 296-155-375 Jacks—Lever and ratchet, screw, and hydraulic.** General requirements.

(1) The manufacturer's rated capacity shall be legibly marked on all jacks and this capacity shall not be exceeded.

(2) All jacks shall have a positive stop to prevent overtravel.

(3) Specially designed jacks constructed for specific purposes shall meet the approval of the division of Industrial Safety and Health before being placed in service.

(4) Control parts shall be so designed that the operator will not be subjected to hazard.

(5) Blocking. When it is necessary to provide a firm foundation, the base of the jack shall be blocked or cribbed. Where there is a possibility of slippage of the metal cap of the jack, a wood block shall be placed between the cap and the load.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-155-375, filed 2/3/93, effective 3/15/93; 91-11-070 (Order 91-01), § 296-155-375, filed 5/20/91, effective 6/20/91; Order 74-26, § 296-155-375, filed 5/7/74, effective 6/6/74.]

**WAC 296-155-444 General requirements.** (1) Approval. All electrical conductors and equipment shall be approved.

(2) Examination, installation, and use of equipment.

(a) Examination. The employer shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined on the basis of the following considerations:

(i) Suitability for installation and use in conformity with the provisions of this part. Suitability of equipment for an identified purpose may be evidenced by listing, labeling, or certification for that identified purpose.

(ii) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided.

(iii) Electrical insulation.

(iv) Heating effects under conditions of use.

(v) Arcing effects.

(vi) Classification by type, size, voltage, current capacity, specific use.

(vii) Other factors which contribute to the practical safeguarding of employees using or likely to come in contact with the equipment.

(b) Installation and use. Listed, labeled, or certified equipment shall be installed and used in accordance with instructions included in the listing, labeling, or certification.

(3) Interrupting rating. Equipment intended to break current shall have an interrupting rating at system voltage sufficient for the current that must be interrupted.

(4) Mounting and cooling of equipment.

(a) Mounting. Electric equipment shall be firmly secured to the surface on which it is mounted. Wooden plugs driven into holes in masonry, concrete, plaster, or similar materials shall not be used.

(b) Cooling. Electrical equipment which depends upon the natural circulation of air and convection principles for cooling of exposed surfaces shall be installed so that room air flow over such surfaces is not prevented by walls or by adjacent installed equipment. For equipment designed for floor mounting, clearance between top surfaces and adjacent surfaces shall be provided to dissipate rising warm air. Electrical equipment provided with ventilating openings shall be installed so that walls or other obstructions do not prevent the free circulation of air through the equipment.

(5) Splices. Conductors shall be spliced or joined with splicing devices designed for the use or by brazing, welding, or soldering with a fusible metal or alloy. Soldered splices shall first be so spliced or joined as to be mechanically and electrically secure without solder and then soldered. All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors or with an insulating device designed for the purpose.

(6) Arcing parts. Parts of electric equipment which in ordinary operation produce arcs, sparks, flames, or molten metal shall be enclosed or separated and isolated from all combustible material.

(7) Marking. Electrical equipment shall not be used unless the manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product may be identified is placed on the equipment and unless other markings are provided giving voltage, current, wattage, or other ratings as necessary. The marking shall be of sufficient durability to withstand the environment involved.

(8) Identification of disconnecting means and circuits. Each disconnecting means required by this part for motors and appliances shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. Each service, feeder, and branch circuit, at its disconnecting means or overcurrent device, shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. These markings shall be of sufficient durability to withstand the environment involved.

(9) Construction site. Precautions shall be taken to make any necessary open wiring inaccessible to unauthorized personnel.

(10) 600 volts, nominal, or less. This subsection applies to equipment operating at 600 volts, nominal, or less.

(a) Working space about electric equipment. Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment.

(i) Working clearances. Except as required or permitted elsewhere in this part, the dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive shall not be less than indicated in Table I-1. In addition to the dimensions shown in Table I-1, workspace shall not be less than 30 inches (762 mm) wide in front of the electric equipment. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. Walls constructed of concrete, brick, or tile are considered to be grounded. Working space is not required in back of assemblies such as dead-front switchboards or motor control centers where there are no renewable or adjustable parts such as fuses or switches on the back and where all connections are accessible from locations other than the back.

Table I-1
Working Clearances

| Nominal Voltage to Ground | Minimum Clear Distance for Conditions [1] (a) | (b) | (c) |
|---|---|---|---|
| | Feet [2] | Feet [2] | Feet [2] |
| 0-150 | 3 | 3 | 3 |
| 151-600 | 3 | 31/2 | 4 |

[1] Conditions (a), (b), and (c) are as follows: (a) Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by insulating material. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts. (b) Exposed live parts on one side and grounded parts on the other side. (c) Exposed live parts on both sides of the workspace not guarded provided in condition (a) with the operator between.

[2] Note: For International System of Units (S1): One foot=0.3048m.

(ii) Clear spaces. Working space required by this part shall not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be guarded.

(iii) Access and entrance to working space. At least one entrance shall be provided to give access to the working space about electric equipment.

(iv) Front working space. Where there are live parts normally exposed on the front of switchboards or motor control centers, the working space in front of such equipment shall not be less than 3 feet (914 mm).

(v) Headroom. The minimum headroom of working spaces about service equipment, switchboards, panelboards, or motor control centers shall be 6 feet 3 inches (1.91 m).

(b) Guarding of live parts.

(i) Except as required or permitted elsewhere in this part, live parts of electric equipment operating at 50 volts or more shall be guarded against accidental contact by cabinets or other forms of enclosures, or by any of the following means:

(A) By location in a room, vault, or similar enclosure that is accessible only to qualified persons.

(B) By partitions or screens so arranged that only qualified persons will have access to the space within reach of the live parts. Any openings in such partitions or screens shall be so sized and located that persons are not likely to come into accidental contact with the live parts or to bring conducting objects into contact with them.

(C) By location on a balcony, gallery, or platform so elevated and arranged as to exclude unqualified persons.

(D) By elevation of 8 feet (2.44 m) or more above the floor or other working surface and so installed as to exclude unqualified persons.

(ii) In locations where electric equipment would be exposed to physical damage, enclosures or guards shall be so arranged and of such strength as to prevent such damage.

(iii) Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

(11) Over 600 volts, nominal.

(a) General. Conductors and equipment used on circuits exceeding 600 volts, nominal, shall comply with all applicable provisions of subsections (1) through (7) of this section and with the following provisions which supplement or modify those requirements. The provisions of (b), (c), and (d) of this subsection do not apply to equipment on the supply side of the service conductors.

(b) Enclosure for electrical installations. Electrical installations in a vault, room, closet or in an area surrounded by a wall, screen, or fence, access to which is controlled by lock and key or other equivalent means, are considered to be accessible to qualified persons only. A wall, screen, or fence less than 8 feet (2.44 m) in height is not considered adequate to prevent access unless it has other features that provide a degree of isolation equivalent to an 8 foot (2.44 m) fence. The entrances to all buildings, rooms or enclosures containing exposed live parts or exposed conductors operating at over 600 volts, nominal, shall be kept locked or shall be under the observation of a qualified person at all times.

(i) Installations accessible to qualified persons only. Electrical installations having exposed live parts shall be accessible to qualified persons only and shall comply with the applicable provisions of (c) of this subsection.

(ii) Installations accessible to unqualified persons. Electrical installations that are open to unqualified persons shall be made with metal-enclosed equipment or shall be enclosed in a vault or in an area, access to which is controlled by a lock. Metal-enclosed switchgear, unit substations, transformers, pull boxes, connection boxes, and other similar associated equipment shall be marked with appropriate caution signs. If equipment is exposed to physical damage from vehicular traffic, guards shall be provided to prevent such damage. Ventilating or similar openings in metal-enclosed equipment shall be designed so that foreign objects inserted through these openings will be deflected from energized parts.

(c) Workspace about equipment. Sufficient space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment. Where energized parts are exposed, the minimum clear workspace shall not be less than 6 feet 6 inches (1.98 m) high (measured vertically from the floor or platform,) or less than 3 feet (914 mm) wide (measured parallel to the equipment.) The depth shall be as required in Table I-2. The workspace shall be adequate to permit at least a ninety degree opening of doors or hinged panels.

(i) Working space. The minimum clear working space in front of electric equipment such as switchboards, control panels, switches, circuit breakers, motor controllers, relays, and similar equipment shall not be less than specified in Table I-2 unless otherwise specified in this part. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. However, working space is not required in back of equipment such as deadfront switchboards or control assemblies where there are no renewable or adjustable parts (such as fuses or switches) on the back and where all connections are accessible from locations other than the back. Where rear access is required to work on de-energized parts on the back of enclosed equipment, a minimum working space of 30 inches (762 mm) horizontally shall be provided.

Table I-2
Minimum Depth of Clear Working
Space in Front of electric Equipment

| Nominal Voltage to Ground | Minimum Clear Distance for Conditions [1] (a) | (b) | (c) |
|---|---|---|---|
| | Feet [2] | Feet [2] | Feet [2] |
| 601 to 2,500 | 3 | 4 | 5 |
| 2,501 to 9,000 | 4 | 5 | 6 |
| 9,001 to 25,000 | 5 | 6 | 9 |
| 25,001 to 75kV | 6 | 8 | 10 |
| Above 75kV | 8 | 10 | 12 |

[1] Conditions (a), (b), and (c) are as follows: (a) Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by insulating materials. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts. (b) Exposed live

parts on one side and grounded parts on the other side. Walls constructed of concrete, brick, or the tile are considered to be grounded surfaces. (c) Exposed live parts on both sides of the workspace (not guarded as provided in Condition (a)) with the operator between.

[2] Note: For S1 units: One foot=0.3048m.

(ii) Lighting outlets and points of control. The lighting outlets shall be so arranged that persons changing lamps or making repairs on the lighting system will not be endangered by live parts or other equipment. The points of control shall be so located that persons are not likely to come in contact with any live part or moving part of the equipment while turning on the lights.

(iii) Elevation of unguarded live parts. Unguarded live parts above working space shall be maintained at elevations not less than specified in Table I-3.

Table I-3
Elevation of Unguarded
Energized Parts Above Working Space

| Nominal Voltage to Between Phases | Minimum Elevation |
|---|---|
| 601 to 7,500 | 8 feet 6 inches[1] |
| 7,501 to 35,000 | 9 feet |
| Over 35kV | 9 feet + 0.37 inches per kV above 35kV |

[1] Note: For S1 units: One inch=25.4mm, one foot=0.3048m.

(d) Entrance and access to workspace. At least one entrance not less than 24 inches (610 mm) wide and 6 feet 6 inches (1.98 m) high shall be provided to give access to the working space about electric equipment. On switchboard and control panels exceeding 48 inches (1.22 m) in width, there shall be one entrance at each end of such board where practicable. Where bare energized parts at any voltage or insulated energized parts above 600 volts are located adjacent to such entrance, they shall be guarded.

(12) Welding and cutting equipment. Welding and cutting equipment shall meet the requirements specified in Parts D and H of this chapter.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-444, filed 9/22/93, effective 11/1/93; 92-23-017 (Order 92-13), § 296-155-444, filed 11/10/92, effective 12/18/92; 88-11-021 (Order 88-04), § 296-155-444 filed 5/11/88.]

**WAC 296-155-447 Wiring design and protection.** (1) Use and identification of grounded and grounding conductors.

(a) Identification of conductors. A conductor used as a grounded conductor shall be identifiable and distinguishable from all other conductors. A conductor used as an equipment grounding conductor shall be identifiable and distinguishable from all other conductors.

(b) Polarity of connections. No grounded conductor shall be attached to any terminal or lead so as to reverse designated polarity.

(c) Use of grounding terminals and devices. A grounding terminal or grounding-type device on a receptacle, cord connector, or attachment plug shall not be used for purposes other than grounding.

(2) Branch circuits.

(a) Ground-fault protection.

(i) General. The employer shall use either ground-fault circuit interrupters as specified in (a)(ii) of this subsection or an assured equipment grounding conductor program as specified in (a)(iii) of this subsection to protect employees on construction sites. These requirements are in addition to any other requirements for equipment grounding conductors.

(ii) Ground-fault circuit interrupters. All 120-volt, single-phase, 15-ampere and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters.

(iii) Assured equipment grounding conductor program. The employer shall establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. This program shall comply with the following minimum requirements:

(A) A written description of the program, including the specific procedures adopted by the employer, shall be available at the jobsite for inspection and copying by the director and any affected employee.

(B) The employer shall designate one or more competent persons (as defined in WAC 296-155-012(4)) to implement the program, and to perform continuing tests and inspections as required.

(C) Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each day's use for external defects, such as deformed or missing pins or insulation damage, and for indications of possible internal damage. Equipment found damaged or defective shall not be used until repaired.

(D) The following tests shall be performed on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord-connected and plug-connected equipment required to be grounded:

(I) All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

(II) Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

(III) Each outlet receptacle, or power source shall be tested to ensure proper polarity.

(E) All required tests shall be performed:

(I) Before first use;

(II) Before equipment is returned to service following any repairs;

(III) Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over); and

(IV) At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.

(F) The employer shall not make available or permit the use by employees of any equipment which has not met the requirements of (a)(iii) of this subsection.

(G) Tests performed as required in this subsection shall be recorded. This test record shall identify each receptacle, cord set, and cord-connected and plug-connected equipment that passed the test and shall indicate the last date it was tested or the interval for which it was tested. This record shall be kept by means of logs, color coding, or other effective means and shall be maintained until replaced by a more current record. The record shall be made available on the jobsite for inspection by the director and any affected employee.

(b) Outlet devices. Outlet devices shall have an ampere rating not less than the load to be served and shall comply with the following:

(i) Single receptacles. A single receptacle installed on an individual branch circuit shall have an ampere rating of not less than that of the branch circuit.

(ii) Two or more receptacles. Where connected to a branch circuit supplying two or more receptacles or outlets, receptacle ratings shall conform to the values listed in Table I-4.

(iii) Receptacles used for the connection of motors. The rating of an attachment plug or receptacle used for cord-connection and plug-connection of a motor to a branch circuit shall not exceed 15 amperes at 125 volts or 10 amperes at 250 volts if individual overload protection is omitted.

Table I-4
Receptacle Ratings for Various Size Circuits

| Circuit Rating Amperes | Receptacle Rating Amperes |
|---|---|
| 15 | Not Over 15 |
| 20 | 15 or 20 |
| 30 | 30 |
| 40 | 40 or 50 |
| 50 | 50 |

(3) Outside conductors and lamps.

(a) 600 volts, nominal, or less. (a)(i) through (iv)(D) of this subsection apply to branch circuit, feeder, and service conductors rated 600 volts, nominal, or less and run outdoors as open conductors.

(i) Conductors on poles. Conductors supported on poles shall provide a horizontal climbing space not less than the following:

(A) Power conductors below communication conductors: 30 inches (762 mm).

(B) Power conductors alone or above communication conductors: 300 volts or less—24 inches (610 mm); more than 300 volts—30 inches (762 mm).

(C) Communication conductors below power conductors: With power conductors 300 volts or less—24 inches (610 mm); more than 300 volts—30 inches (762 mm).

(ii) Clearance from ground. Open conductors shall conform to the following minimum clearances:

(A) 10 feet (3.05 m)—above finished grade, sidewalks, or from any platform or projection from which they might be reached.

(B) 12 feet (3.66 m)—over areas subject to vehicular traffic other than truck traffic.

(C) 15 feet (4.57 m)—over areas other than those specified in (a)(ii)(D) of this subsection that are subject to truck traffic.

(D) 18 feet (5.49 m)—over public streets, alleys, roads, and driveways.

(iii) Clearance from building openings. Conductors shall have a clearance of at least 3 feet (914 mm) from windows, doors, fire escapes, or similar locations. Conductors run above the top level of a window are considered to be out of reach from that window and, therefore, do not have to be 3 feet (914 mm) away.

(iv) Clearance over roofs. Conductors above roof space accessible to employees on foot shall have a clearance from the highest point of the roof surface of not less than 8 feet (2.44 m) vertical clearance for insulated conductors, not less than 10 feet (3.05 m) vertical or diagonal clearance for covered conductors, and not less than 15 feet (4.57 m) for bare conductors, except that:

(A) Where the roof space is also accessible to vehicular traffic, the vertical clearance shall not be less than 18 feet (5.49 m); or

(B) Where the roof space is not normally accessible to employees on foot, fully insulated conductors shall have a vertical or diagonal clearance of not less than 3 feet (914 mm); or

(C) Where the voltage between conductors is 300 volts or less and the roof has a slope of not less than 4 inches (102 mm) in 12 inches (305 mm), the clearance from roofs shall be at least 3 feet (914 mm); or

(D) Where the voltage between conductors is 300 volts or less and the conductors do not pass over more than 4 feet (1.22 m) of the overhang portion of the roof and they are terminated at a through-the-roof raceway or support, the clearance from roofs shall be at least 18 inches (457 mm).

(b) Location of outdoor lamps. Lamps for outdoor lighting shall be located below all live conductors, transformers, or other electric equipment, unless such equipment is controlled by a disconnecting means that can be locked in the open position or unless adequate clearances or other safeguards are provided for relamping operations.

(4) Services.

(a) Disconnecting means.

(i) General. Means shall be provided to disconnect all conductors in a building or other structure from the service-entrance conductors. The disconnecting means shall plainly indicate whether it is in the open or closed position and shall be installed at a readily accessible location nearest the point of entrance of the service-entrance conductors.

(ii) Simultaneous opening of poles. Each service disconnecting means shall simultaneously disconnect all ungrounded conductors.

(b) Services over 600 volts, nominal. The following additional requirements apply to services over 600 volts, nominal.

(i) Guarding. Service-entrance conductors installed as open wires shall be guarded to make them accessible only to qualified persons.

(ii) Warning signs. Signs warning of high voltage shall be posted where unauthorized employees might come in contact with live parts.

(5) Overcurrent protection.

(a) 600 volts, nominal, or less. The following requirements apply to overcurrent protection of circuits rated 600 volts, nominal, or less.

(i) Protection of conductors and equipment. Conductors and equipment shall be protected from overcurrent in accordance with their ability to safely conduct current. Conductors shall have sufficient ampacity to carry the load.

(ii) Grounded conductors. Except for motor-running overload protection, overcurrent devices shall not interrupt the continuity of the grounded conductor unless all conductors of the circuit are opened simultaneously.

(iii) Disconnection of fuses and thermal cutouts. Except for devices provided for current-limiting on the supply side of the service disconnecting means, all cartridge fuses which are accessible to other than qualified persons and all fuses and thermal cutouts on circuits over 150 volts to ground shall be provided with disconnecting means. This disconnecting means shall be installed so that the fuse or thermal cutout can be disconnected from its supply without disrupting service to equipment and circuits unrelated to those protected by the overcurrent device.

(iv) Location in or on premises. Overcurrent devices shall be readily accessible. Overcurrent devices shall not be located where they could create an employee safety hazard by being exposed to physical damage or located in the vicinity of easily ignitible material.

(v) Arcing or suddenly moving parts. Fuses and circuit breakers shall be so located or shielded that employees will not be burned or otherwise injured by their operation.

(vi) Circuit breakers.

(A) Circuit breakers shall clearly indicate whether they are in the open (off) or closed (on) position.

(B) Where circuit breaker handles on switchboards are operated vertically rather than horizontally or rotationally, the up position of the handle shall be the closed (on) position.

(C) If used as switches in 120-volt, fluorescent lighting circuits, circuit breakers shall be marked "SWD."

(b) Over 600 volts, nominal. Feeders and branch circuits over 600 volts, nominal, shall have short-circuit protection.

(6) Effective grounding. The path from circuits, equipment, structures, and conduit or enclosures to ground shall be permanent and continuous; have ample carrying capacity to conduct safely the currents liable to be imposed on it; and have the impedance sufficiently low to limit the potential above ground and to result in the operation of the overcurrent devices in the circuit. (a) through (k) of this subsection contain grounding requirements for systems, circuits, and equipment.

(a) Systems to be grounded. The following systems which supply premises wiring shall be grounded:

(i) Three-wire DC systems. All three-wire DC systems shall have their neutral conductor grounded.

(ii) Two-wire DC systems. Two-wire DC systems operating at over 50 volts through 300 volts between conductors shall be grounded unless they are rectifier-derived from an AC system complying with (a)(iii), (iv), and (v) of this subsection.

(iii) AC circuits, less than 50 volts. AC circuits of less than 50 volts shall be grounded if they are installed as overhead conductors outside of buildings or if they are supplied by transformers and the transformer primary supply system is ungrounded or exceeds 150 volts to ground.

(iv) AC systems, 50 volts to 1000 volts. AC systems of 50 volts to 1000 volts shall be grounded under any of the following conditions, unless exempted by (a)(v) of this subsection:

(A) If the system can be so grounded that the maximum voltage to ground on the ungrounded conductors does not exceed 150 volts;

(B) If the system is nominally rated 480Y/277 volt, 3-phase, 4-wire in which the neutral is used as a circuit conductor;

(C) If the system is nominally rated 240/120 volt, 3-phase, 4-wire in which the midpoint of one phase is used as a circuit conductor; or

(D) If a service conductor is uninsulated.

(v) Exceptions. AC systems of 50 volts to 1000 volts are not required to be grounded if the system is separately derived and is supplied by a transformer that has a primary voltage rating less than 1000 volts, provided all of the following conditions are met:

(A) The system is used exclusively for control circuits;

(B) The conditions of maintenance and supervision assure that only qualified persons will service the installation;

(C) Continuity of control power is required; and

(D) Ground detectors are installed on the control system.

(b) Separately derived systems. Where (a) of this subsection requires grounding of wiring systems whose power is derived from generator, transformer, or converter windings and has no direct electrical connection, including a solidly connected grounded circuit conductor, to supply conductors originating in another system, (e) of this subsection shall also apply.

(c) Portable and vehicle-mounted generators.

(i) Portable generators. Under the following conditions, the frame of a portable generator need not be grounded and may serve as the grounding electrode for a system supplied by the generator:

(A) The generator supplies only equipment mounted on the generator and/or cord-connected and plug-connected equipment through receptacles mounted on the generator; and

(B) The noncurrent-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame.

(ii) 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:

(A) The frame of the generator is bonded to the vehicle frame; and

(B) 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

(C) The noncurrent-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame; and

(D) The system complies with all other provisions of this section.

(iii) Neutral conductor bonding. A neutral conductor shall be bonded to the generator frame if the generator is a component of a separately derived system. No other conductor need be bonded to the generator frame.

(d) Conductors to be grounded. For AC premises wiring systems the identified conductor shall be grounded.

(e) Grounding connections.

(i) Grounded system. For a grounded system, a grounding electrode conductor shall be used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode. Both the equipment grounding conductor and the grounding electrode conductor shall be connected to the grounded circuit conductor on the supply side of the service disconnecting means, or on the supply side of the system disconnecting means or overcurrent devices if the system is separately derived.

(ii) Ungrounded systems. For an ungrounded service-supplied system, the equipment grounding conductor shall be connected to the grounding electrode conductor at the service equipment. For an ungrounded separately derived system, the equipment grounding conductor shall be connected to the grounding electrode conductor at, or ahead of, the system disconnecting means or overcurrent devices.

(f) Grounding path. The path to ground from circuits, equipment, and enclosures shall be permanent and continuous.

(g) Supports, enclosures, and equipment to be grounded.

(i) Supports and enclosures for conductors. Metal cable trays, metal raceways, and metal enclosures for conductors shall be grounded, except that:

(A) Metal enclosures such as sleeves that are used to protect cable assemblies from physical damage need not be grounded; and

(B) Metal enclosures for conductors added to existing installations of open wire, knob-and-tube wiring, and nonmetallic-sheathed cable need not be grounded if all of the following conditions are met:

(I) Runs are less than 25 feet (7.62 m);

(II) Enclosures are free from probable contact with ground, grounded metal, metal laths, or other conductive materials; and

(III) Enclosures are guarded against employee contact.

(ii) Service equipment enclosures. Metal enclosures for service equipment shall be grounded.

(iii) Fixed equipment. Exposed noncurrent-carrying metal parts of fixed equipment which may become energized shall be grounded under any of the following conditions:

(A) If within 8 feet (2.44 m) vertically or 5 feet (1.52 m) horizontally of ground or grounded metal objects and subject to employee contact.

(B) If located in a wet or damp location and subject to employee contact.

(C) If in electrical contact with metal.

(D) If in a hazardous (classified) location.

(E) If supplied by a metal-clad, metal-sheathed, or grounded metal raceway wiring method.

(F) If equipment operates with any terminal at over 150 volts to ground; however, the following need not be grounded:

(I) Enclosures for switches or circuit breakers used for other than service equipment and accessible to qualified persons only;

(II) Metal frames of electrically heated appliances which are permanently and effectively insulated from ground; and

(III) The cases of distribution apparatus such as transformers and capacitors mounted on wooden poles at a height exceeding 8 feet (2.44 m) above ground or grade level.

(iv) Equipment connected by cord and plug. Under any of the conditions described in (g)(iv) (A) through (C) of this subsection, exposed noncurrent-carrying metal parts of cord-connected and plug-connected equipment which may become energized shall be grounded:

(A) If in a hazardous (classified) location (see WAC 296-155-444).

(B) If operated at over 150 volts to ground, except for guarded motors and metal frames of electrically heated appliances if the appliance frames are permanently and effectively insulated from ground.

(C) If the equipment is one of the types listed in (g)(iv)(C)(I) through (V) of this subsection. However, even though the equipment may be one of these types, it need not be grounded if it is exempted by (g)(iv)(C)(VI) of this subsection.

(I) Hand held motor-operated tools;

(II) Cord-connected and plug-connected equipment used in damp or wet locations or by employees standing on the ground or on metal floors or working inside of metal tanks or boilers;

(III) Portable and mobile x-ray and associated equipment;

(IV) Tools likely to be used in wet and/or conductive locations; and

(V) Portable hand lamps.

(VI) Tools likely to be used in wet and/or conductive locations need not be grounded if supplied through an isolating transformer with an ungrounded secondary of not over 50 volts. Listed or labeled portable tools and appliances protected by a system of double insulation, or its equivalent, need not be grounded. If such a system is employed, the equipment shall be distinctively marked to indicate that the tool or appliance utilizes a system of double insulation.

(v) Nonelectrical equipment. The metal parts of the following nonelectrical equipment shall be grounded: Frames and tracks of electrically operated cranes; frames of nonelectrically driven elevator cars to which electric conductors are attached; hand-operated metal shifting ropes or cables of electric elevators, and metal partitions, grill work, and similar metal enclosures around equipment of over IkV between conductors.

(h) Methods of grounding equipment.

(i) With circuit conductors. Noncurrent-carrying metal parts of fixed equipment, if required to be grounded by this part, shall be grounded by an equipment grounding conductor which is contained within the same raceway, cable, or cord, or runs with or encloses the circuit conductors. For

DC circuits only, the equipment grounding conductor may be run separately from the circuit conductors.

(ii) Grounding conductor. A conductor used for grounding fixed or movable equipment shall have capacity to conduct safely any fault current which may be imposed on it.

(iii) Equipment considered effectively grounded. Electric equipment is considered to be effectively grounded if it is secured to, and in electrical contact with, a metal rack or structure that is provided for its support and the metal rack or structure is grounded by the method specified for the noncurrent-carrying metal parts of fixed equipment in (h)(i) of this subsection. Metal car frames supported by metal hoisting cables attached to or running over metal sheaves or drums of grounded elevator machines are also considered to be effectively grounded.

(i) Bonding.

(i) If bonding conductors are used to assure electrical continuity, they shall have the capacity to conduct any fault current which may be imposed.

(ii) When attaching bonding and grounding clamps or clips, a secure and positive metal-to-metal contact shall be made. Such attachments shall be made before closures are opened and material movements are started and shall not be broken until after material movements are stopped and closures are made.

(j) Made electrodes. If made electrodes are used, they shall be free from nonconductive coatings, such as paint or enamel; and, if practicable, they shall be embedded below permanent moisture level. A single electrode consisting of a rod, pipe or plate which has a resistance to ground greater than 25 ohms shall be augmented by one additional electrode installed no closer than 6 feet (1.83 m) to the first electrode.

(k) Grounding of systems and circuits of 1000 volts and over (high voltage).

(i) General. If high voltage systems are grounded, they shall comply with all applicable provisions of (a) through (j) of this subsection as supplemented and modified by (k) of this subsection.

(ii) Grounding of systems supplying portable or mobile equipment. Systems supplying portable or mobile high voltage equipment, other than substations installed on a temporary basis, shall comply with the following:

(A) Portable and mobile high voltage equipment shall be supplied from a system having its neutral grounded through an impedance. If a delta-connected high voltage system is used to supply the equipment, a system neutral shall be derived.

(B) Exposed noncurrent-carrying metal parts of portable and mobile equipment shall be connected by an equipment grounding conductor to the point at which the system neutral impedance is grounded.

(C) Ground-fault detection and relaying shall be provided to automatically deenergize any high voltage system component which has developed a ground fault. The continuity of the equipment grounding conductor shall be continuously monitored so as to de-energize automatically the high voltage feeder to the portable equipment upon loss of continuity of the equipment grounding conductor.

(D) The grounding electrode to which the portable or mobile equipment system neutral impedance is connected shall be isolated from and separated in the ground by at least 20 feet (6.1 m) from any other system or equipment grounding electrode, and there shall be no direct connection between the grounding electrodes, such as buried pipe, fence or like objects.

(iii) Grounding of equipment. All noncurrent-carrying metal parts of portable equipment and fixed equipment including their associated fences, housings, enclosures, and supporting structures shall be grounded. However, equipment which is guarded by location and isolated from ground need not be grounded. Additionally, pole-mounted distribution apparatus at a height exceeding 8 feet (2.44 m) above ground or grade level need not be grounded.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-447, filed 9/22/93, effective 11/1/93; 88-11-021 (Order 88-04), § 296-155-447 filed 5/11/88.]

**WAC 296-155-449 Wiring methods, components, and equipment for general use.** (1) Wiring methods. The provisions of this subsection do not apply to conductors which form an integral part of equipment such as motors, controllers, motor control centers and like equipment.

(a) General requirements.

(i) Electrical continuity of metal raceways and enclosures. Metal raceways, cable armor, and other metal enclosures for conductors shall be metallically joined together into a continuous electric conductor and shall be so connected to all boxes, fittings, and cabinets as to provide effective electrical continuity.

(ii) Wiring in ducts. No wiring systems of any type shall be installed in ducts used to transport dust, loose stock or flammable vapors. No wiring system of any type shall be installed in any duct used for vapor removal or in any shaft containing only such ducts.

(iii) Receptacles for attachment plugs shall be approved, concealed contact type with a contact for extending ground continuity and shall be so designed and constructed that the plug may be pulled out without leaving any live parts exposed to accidental contact. All temporary outlet boxes shall be of a type suitable for use in wet or damp locations.

(iv) Attachment plugs or other connectors supplying equipment at more than 300 volts shall be of the skirted type or otherwise so designed that arcs will be confined.

(b) Temporary wiring.

(i) Scope. The provisions of (b) of this subsection apply to temporary electrical power and lighting wiring methods which may be of a class less than would be required for a permanent installation. Except as specifically modified in (b) of this subsection, all other requirements of this part for permanent wiring shall apply to temporary wiring installations. Temporary wiring shall be removed immediately upon completion of construction or the purpose for which the wiring was installed.

(ii) General requirements for temporary wiring.

(A) Feeders shall originate in a distribution center. The conductors shall be run as multiconductor cord or cable assemblies or within raceways; or, where not subject to physical damage, they may be run as open conductors on insulators not more than 10 feet (3.05 m) apart.

(B) Branch circuits shall originate in a power outlet or panelboard. Conductors shall be run as multiconductor cord or cable assemblies or open conductors, or shall be run in

raceways. All conductors shall be protected by overcurrent devices at their ampacity. Runs of open conductors shall be located where the conductors will not be subject to physical damage, and the conductors shall be fastened at intervals not exceeding 10 feet (3.05 m). No branch-circuit conductors shall be laid on the floor. Each branch circuit that supplies receptacles or fixed equipment shall contain a separate equipment grounding conductor if the branch circuit is run as open conductors.

(C) Receptacles shall be of the grounding type. Unless installed in a complete metallic raceway, each branch circuit shall contain a separate equipment grounding conductor, and all receptacles shall be electrically connected to the grounding conductor. Receptacles for uses other than temporary lighting shall not be installed on branch circuits which supply temporary lighting. Receptacles shall not be connected to the same ungrounded conductor of multiwire circuits which supply temporary lighting.

(D) Disconnecting switches or plug connectors shall be installed to permit the disconnection of all ungrounded conductors of each temporary circuit.

(E) All lamps for general illumination shall be protected from accidental contact or breakage. Metal-case sockets shall be grounded.

(F) Temporary lights shall be equipped with hard usage (S or SJ types) electric cords with connections and insulation maintained in safe condition. "Brewery" cord (type CBO or NB) may be substituted for hard usage cord provided it is protected from physical damages. Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this means of suspension. Splices shall retain the insulation, outer sheath properties, flexibility, and usage characteristics of the cord being spliced.

When pin-type connectors or lampholders are utilized, the area of perforations caused by lampholder removal shall be restored to the insulation capabilities of the cord.

(G) Portable electric lighting used in wet and/or other conductive locations, as for example, drums, tanks, and vessels, shall be operated at 12 volts or less. However, 120-volt lights may be used if protected by a ground-fault circuit interrupter.

(H) A box shall be used wherever a change is made to a raceway system or a cable system which is metal clad or metal sheathed.

(I) Flexible cords and cables shall be protected from damage. Sharp corners and projections shall be avoided. Flexible cords and cables may pass through doorways or other pinch points, if protection is provided to avoid damage.

(J) Extension cord sets used with portable electric tools and appliances shall be of three-wire type and shall be designed for hard or extra-hard usage. Flexible cords used with temporary and portable lights shall be designed for hard or extra-hard usage.

Note: The National Electrical Code, ANSI/NFPA 70, in Article 400, Table 400-4, lists various types of flexible cords, some of which are noted as being designed for hard or extra-hard usage. Examples of these types of flexible cords include hard service cord (types S, ST, SO, STO) and junior hard service cord (types SJ, SJO, SJT, SJTO).

(iii) Guarding. For temporary wiring over 600 volts, nominal, fencing, barriers, or other effective means shall be provided to prevent access of other than authorized and qualified personnel.

(2) Cabinets, boxes, and fittings.

(a) Conductors entering boxes, cabinets, or fittings. Conductors entering boxes, cabinets, or fittings shall be protected from abrasion, and openings through which conductors enter shall be effectively closed. Unused openings in cabinets, boxes, and fittings shall also be effectively closed.

(b) Covers and canopies. All pull boxes, junction boxes, and fittings shall be provided with covers. If metal covers are used, they shall be grounded. In energized installations each outlet box shall have a cover, faceplate, or fixture canopy. Covers of outlet boxes having holes through which flexible cord pendants pass shall be provided with bushings designed for the purpose or shall have smooth, well-rounded surfaces on which the cords may bear.

(c) Pull and junction boxes for systems over 600 volts, nominal. In addition to other requirements in this section for pull and junction boxes, the following shall apply to these boxes for systems over 600 volts, nominal:

(i) Complete enclosure. Boxes shall provide a complete enclosure for the contained conductors or cables.

(ii) Covers. Boxes shall be closed by covers securely fastened in place. Underground box covers that weigh over 100 pounds (43.6 kg) meet this requirement. Covers for boxes shall be permanently marked "HIGH VOLTAGE." The marking shall be on the outside of the box cover and shall be readily visible and legible.

(3) Knife switches. Single-throw knife switches shall be so connected that the blades are dead when the switch is in the open position. Single-throw knife switches shall be so placed that gravity will not tend to close them. Single-throw knife switches approved for use in the inverted position shall be provided with a locking device that will ensure that the blades remain in the open position when so set. Double-throw knife switches may be mounted so that the throw will be either vertical or horizontal. However, if the throw is vertical, a locking device shall be provided to ensure that the blades remain in the open position when so set.

(4) Switchboards and panelboards. Switchboards that have any exposed live parts shall be located in permanently dry locations and accessible only to qualified persons. Panelboards shall be mounted in cabinets, cutout boxes, or enclosures designed for the purpose and shall be dead front. However, panelboards other than the dead front externally-operable type are permitted where accessible only to qualified persons. Exposed blades of knife switches shall be dead when open.

(5) Enclosures for damp or wet locations.

(a) Cabinets, fittings, and boxes. Cabinets, cutout boxes, fittings, boxes, and panelboard enclosures in damp or wet locations shall be installed so as to prevent moisture or water from entering and accumulating within the enclosures. In wet locations the enclosures shall be weatherproof.

(b) Switches and circuit breakers. Switches, circuit breakers, and switchboards installed in wet locations shall be enclosed in weatherproof enclosures.

(6) Conductors for general wiring. All conductors used for general wiring shall be insulated unless otherwise permitted in this part. The conductor insulation shall be of

a type that is suitable for the voltage, operating temperature, and location of use. Insulated conductors shall be distinguishable by appropriate color or other means as being grounded conductors, ungrounded conductors, or equipment grounding conductors.

(7) Flexible cords and cables.

(a) Use of flexible cords and cables.

(i) Permitted uses. Flexible cords and cables shall be suitable for conditions of use and location. Flexible cords and cables shall be used only for:

(A) Pendants;

(B) Wiring of fixtures;

(C) Connection of portable lamps or appliances;

(D) Elevator cables;

(E) Wiring of cranes and hoists;

(F) Connection of stationary equipment to facilitate their frequent interchange;

(G) Prevention of the transmission of noise or vibration; or

(H) Appliances where the fastening means and mechanical connections are designed to permit removal for maintenance and repair.

(ii) Attachment plugs for cords. If used as permitted in (a)(i)(C), (F), or (H) of this subsection, the flexible cord shall be equipped with an attachment plug and shall be energized from a receptacle outlet.

(iii) Prohibited uses. Unless necessary for a use permitted in (a)(i) of this subsection, flexible cords and cables shall not be used:

(A) As a substitute for the fixed wiring of a structure;

(B) Where run through holes in walls, ceilings, or floors;

(C) Where run through doorways, windows, or similar openings, except as permitted in subsection (1)(b)(ii)(I) of this section;

(D) Where attached to building surfaces; or

(E) Where concealed behind building walls, ceilings, or floors.

(b) Identification, splices, and terminations.

(i) Identification. A conductor of a flexible cord or cable that is used as a grounded conductor or an equipment grounding conductor shall be distinguishable from other conductors.

(ii) Marking. Type SJ, SJO, SJT, SJTO, S, SO, ST, and STO cords shall not be used unless durably marked on the surface with the type designation, size, and number of conductors.

(iii) Splices. Flexible cords shall be used only in continuous lengths without splice or tap. Hard service flexible cords No. 12 or larger may be repaired if spliced so that the splice retains the insulation, outer sheath properties, and usage characteristics of the cord being spliced.

(iv) Strain relief. Flexible cords shall be connected to devices and fittings so that strain relief is provided which will prevent pull from being directly transmitted to joints or terminal screws.

(v) Cords passing through holes. Flexible cords and cables shall be protected by bushings or fittings where passing through holes in covers, outlet boxes, or similar enclosures.

(vi) Trailing cables shall be protected from damage.

(vii) Cord and cable passing through work areas shall be covered or elevated to protect it from damage which would create a hazard to employees.

(8) Portable cables over 600 volts, nominal. Multiconductor portable cable for use in supplying power to portable or mobile equipment at over 600 volts, nominal, shall consist of No. 8 or larger conductors employing flexible stranding. Cables operated at over 2000 volts shall be shielded for the purpose of confining the voltage stresses to the insulation. Grounding conductors shall be provided. Connectors for these cables shall be of a locking type with provisions to prevent their opening or closing while energized. Strain relief shall be provided at connections and terminations. Portable cables shall not be operated with splices unless the splices are of the permanent molded, vulcanized, or other equivalent type. Termination enclosures shall be marked with a high voltage hazard warning, and terminations shall be accessible only to authorized and qualified personnel.

(9) Fixture wires.

(a) General. Fixture wires shall be suitable for the voltage, temperature, and location of use. A fixture wire which is used as a grounded conductor shall be identified.

(b) Uses permitted. Fixture wires may be used:

(i) For installation in lighting, fixtures and in similar equipment where enclosed or protected and not subject to bending or twisting in use; or

(ii) For connecting lighting fixtures to the branch-circuit conductors supplying the fixtures.

(c) Uses not permitted. Fixture wires shall not be used as branch-circuit conductors except as permitted for Class 1 power-limited circuits.

(10) Equipment for general use.

(a) Lighting fixtures, lampholders, lamps, and receptacles.

(i) Live parts. Fixtures, lampholders, lamps, rosettes, and receptacles shall have no live parts normally exposed to employee contact. However, rosettes and cleat-type lampholders and receptacles located at least 8 feet (2.44 m) above the floor may have exposed parts.

(ii) Support. Fixtures, lampholders, rosettes, and receptacles shall be securely supported. A fixture that weighs more than 6 pounds (2.72 kg) or exceeds 16 inches (406 mm) in any dimension shall not be supported by the screw shell of a lampholder.

(iii) Portable lamps. Portable lamps shall be wired with flexible cord and an attachment plug of the polarized or grounding type. If the portable lamp uses an Edison-based lampholder, the grounded conductor shall be identified and attached to the screw shell and the identified blade of the attachment plug. In addition, portable handlamps shall comply with the following:

(A) Metal shell, paperlined lampholders shall not be used;

(B) Handlamps shall be equipped with a handle of molded composition or other insulating material;

(C) Handlamps shall be equipped with a substantial guard attached to the lampholder or handle;

(D) Metallic guards shall be grounded by the means of an equipment grounding conductor run within the power supply cord.

(iv) Lampholders. Lampholders of the screw-shell type shall be installed for use as lampholders only. Lampholders installed in wet or damp locations shall be of the weather-proof type.

(v) Fixtures. Fixtures installed in wet or damp locations shall be identified for the purpose and shall be installed so that water cannot enter or accumulate in wireways, lampholders, or other electrical parts.

(b) Receptacles, cord connectors, and attachment plugs (caps).

(i) Configuration. Receptacles, cord connectors, and attachment plugs shall be constructed so that no receptacle or cord connector will accept an attachment plug with a different voltage or current rating than that for which the device is intended. However, a 20-ampere T-slot receptacle or cord connector may accept a 15-ampere attachment plug of the same voltage rating. Receptacles connected to circuits having different voltages, frequencies, or types of current (AC or DC) on the same premises shall be of such design that the attachment plugs used on these circuits are not interchangeable.

(ii) Damp and wet locations. A receptacle installed in a wet or damp location shall be designed for the location.

(c) Appliances.

(i) Live parts. Appliances, other than those in which the current-carrying parts at high temperatures are necessarily exposed, shall have no live parts normally exposed to employee contact.

(ii) Disconnecting means. A means shall be provided to disconnect each appliance.

(iii) Rating. Each appliance shall be marked with its rating in volts and amperes or volts and watts.

(d) Motors. This subdivision applies to motors, motor circuits, and controllers.

(i) In sight from. If specified that one piece of equipment shall be "in sight from" another piece of equipment, one shall be visible and not more than 50 feet (15.2 m) from the other.

(ii) Disconnecting means.

(A) A disconnecting means shall be located in sight from the controller location. The controller disconnecting means for motor branch circuits over 600 volts, nominal, may be out of sight of the controller, if the controller is marked with a warning label giving the location and identification of the disconnecting means which is to be locked in the open position.

(B) The disconnecting means shall disconnect the motor and the controller from all ungrounded supply conductors and shall be so designed that no pole can be operated independently.

(C) If a motor and the driven machinery are not in sight from the controller location, the installation shall comply with one of the following conditions:

(I) The controller disconnecting means shall be capable of being locked in the open position.

(II) A manually operable switch that will disconnect the motor from its source of supply shall be placed in sight from the motor location.

(D) The disconnecting means shall plainly indicate whether it is in the open (off) or closed (on) position.

(E) The disconnecting means shall be readily accessible. If more than one disconnect is provided for the same equipment, only one need be readily accessible.

(F) An individual disconnecting means shall be provided for each motor, but a single disconnecting means may be used for a group of motors under any one of the following conditions:

(I) If a number of motors drive special parts of a single machine or piece of apparatus, such as a metal or wood-working machine, crane, or hoist;

(II) If a group of motors is under the protection of one set of branch-circuit protective devices; or

(III) If a group of motors is in a single room in sight from the location of the disconnecting means.

(iii) Motor overload, short-circuit, and ground-fault protection. Motors, motor-control apparatus, and motor branch-circuit conductors shall be protected against overheating due to motor overloads or failure to start, and against short-circuits or ground faults. These provisions do not require overload protection that will stop a motor where a shutdown is likely to introduce additional or increased hazards, as in the case of fire pumps, or where continued operation of a motor is necessary for a safe shutdown of equipment or process and motor overload sensing devices are connected to a supervised alarm.

(iv) Protection of live parts—all voltages.

(A) Stationary motors having commutators, collectors, and brush rigging located inside of motor end brackets and not conductively connected to supply circuits operating at more than 150 volts to ground need not have such parts guarded. Exposed live parts of motors and controllers operating at 50 volts or more between terminals shall be guarded against accidental contact by any of the following:

(I) By installation in a room or enclosure that is accessible only to qualified persons;

(II) By installation on a balcony, gallery, or platform, so elevated and arranged as to exclude unqualified persons; or

(III) By elevation 8 feet (2.44 m) or more above the floor.

(B) Where live parts of motors or controllers operating at over 150 volts to ground are guarded against accidental contact only by location, and where adjustment or other attendance may be necessary during the operation of the apparatus, insulating mats or platforms shall be provided so that the attendant cannot readily touch live parts unless standing on the mats or platforms.

(e) Transformers.

(i) Application. The following subsections cover the installation of all transformers, except:

(A) Current transformers;

(B) Dry-type transformers installed as a component part of other apparatus;

(C) Transformers which are an integral part of an x-ray, high frequency, or electrostatic-coating apparatus;

(D) Transformers used with Class 2 and Class 3 circuits, sign and outline lighting, electric discharge lighting, and power-limited fire-protective signaling circuits.

(ii) Operating voltage. The operating voltage of exposed live parts of transformer installations shall be indicated by warning signs or visible markings on the equipment or structure.

(iii) Transformers over 35 kV. Dry-type, high fire point liquid-insulated, and askarel-insulated transformers installed indoors and rated over 35 kV shall be in a vault.

(iv) Oil-insulated transformers. If they present a fire hazard to employees, oil-insulated transformers installed indoors shall be in a vault.

(v) Fire protection. Combustible material, combustible buildings and parts of buildings, fire escapes, and door and window openings shall be safeguarded from fires which may originate in oil-insulated transformers attached to or adjacent to a building or combustible material.

(vi) Transformer vaults. Transformer vaults shall be constructed so as to contain fire and combustible liquids within the vault and to prevent unauthorized access. Locks and latches shall be so arranged that a vault door can be readily opened from the inside.

(vii) Pipes and ducts. Any pipe or duct system foreign to the vault installation shall not enter or pass through a transformer vault.

(viii) Material storage. Materials shall not be stored in transformer vaults.

(f) Capacitors.

(i) Drainage of stored charge. All capacitors, except surge capacitors or capacitors included as a component part of other apparatus, shall be provided with an automatic means of draining the stored charge and maintaining the discharged state after the capacitor is disconnected from its source of supply.

(ii) Over 600 volts. Capacitors rated over 600 volts, nominal, shall comply with the following additional requirements:

(A) Isolating or disconnecting switches (with no interrupting rating) shall be interlocked with the load interrupting device or shall be provided with prominently displayed caution signs to prevent switching load current.

(B) For series capacitors the proper switching shall be assured by use of at least one of the following:

(I) Mechanically sequenced isolating and bypass switches;

(II) Interlocks; or

(III) Switching procedure prominently displayed at the switching location.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-449, filed 9/22/93, effective 11/1/93; 92-23-017 (Order 92-13), § 296-155-449, filed 11/10/92, effective 12/18/92; 88-11-021 (Order 88-04), § 296-155-449, filed 5/11/88.]

**WAC 296-155-459 Special systems.** (1) Systems over 600 volts, nominal. (a) through (d) of this subsection contain general requirements for all circuits and equipment operated at over 600 volts.

(a) Wiring methods for fixed installations.

(i) Above ground. Above-ground conductors shall be installed in rigid metal conduit, in intermediate metal conduit, in cable trays, in cablebus, in other suitable raceways, or as open runs of metal-clad cable designed for the use and purpose. However, open runs of nonmetallic-sheathed cable or of bare conductors or busbars may be installed in locations which are accessible only to qualified persons. Metallic shielding components, such as tapes, wires, or braids for conductors, shall be grounded. Open runs of insulated wires and cables having a bare lead sheath or a braided outer covering shall be supported in a manner designed to prevent physical damage to the braid or sheath.

(ii) Installations emerging from the ground. Conductors emerging from the ground shall be enclosed in raceways. Raceways installed on poles shall be of rigid metal conduit, intermediate metal conduit, PVC schedule 80 or equivalent extending from the ground line up to a point 8 feet (2.44 m) above finished grade. Conductors entering a building shall be protected by an enclosure from the ground line to the point of entrance. Metallic enclosures shall be grounded.

(b) Interrupting and isolating devices.

(i) Circuit breakers. Circuit breakers located indoors shall consist of metal-enclosed or fire-resistant, cell-mounted units. In locations accessible only to qualified personnel, open mounting of circuit breakers is permitted. A means of indicating the open and closed position of circuit breakers shall be provided.

(ii) Fused cutouts. Fused cutouts installed in buildings or transformer vaults shall be of a type identified for the purpose. They shall be readily accessible for fuse replacement.

(iii) Equipment isolating means. A means shall be provided to completely isolate equipment for inspection and repairs. Isolating means which are not designed to interrupt the load current of the circuit shall be either interlocked with a circuit interrupter or provided with a sign warning against opening them under load.

(c) Mobile and portable equipment.

(i) Power cable connections to mobile machines. A metallic enclosure shall be provided on the mobile machine for enclosing the terminals of the power cable. The enclosure shall include provisions for a solid connection for the ground wire(s) terminal to ground effectively the machine frame. The method of cable termination used shall prevent any strain or pull on the cable from stressing the electrical connections. The enclosure shall have provision for locking so only authorized qualified persons may open it and shall be marked with a sign warning of the presence of energized parts.

(ii) Guarding live parts. All energized switching and control parts shall be enclosed in effectively grounded metal cabinets or enclosures. Circuit breakers and protective equipment shall have the operating means projecting through the metal cabinet or enclosure so these units can be reset without locked doors being opened. Enclosures and metal cabinets shall be locked so that only authorized qualified persons have access and shall be marked with a sign warning of the presence of energized parts. Collector ring assemblies on revolving-type machines (shovels, draglines, etc.) shall be guarded.

(d) Tunnel installations.

(i) Application. The provisions of this item apply to installation and use of high-voltage power distribution and utilization equipment which is associated with tunnels and which is portable and/or mobile, such as substations, trailers, cars, mobile shovels, draglines, hoists, drills, dredges, compressors, pumps, conveyors, and underground excavators.

(ii) Conductors. Conductors in tunnels shall be installed in one or more of the following:

(A) Metal conduit or other metal raceway;

(B) Type MC cable; or

(C) Other suitable multiconductor cable.

Conductors shall also be so located or guarded as to protect them from physical damage. Multiconductor portable cable may supply mobile equipment. An equipment grounding conductor shall be run with circuit conductors inside the metal raceway or inside the multiconductor cable jacket. The equipment grounding conductor may be insulated or bare.

(iii) Guarding live parts. Bare terminals of transformers, switches, motor controllers, and other equipment shall be enclosed to prevent accidental contact with energized parts. Enclosures for use in tunnels shall be drip-proof, weatherproof, or submersible as required by the environmental conditions.

(iv) Disconnecting means. A disconnecting means that simultaneously opens all ungrounded conductors shall be installed at each transformer or motor location.

(v) Grounding and bonding. All nonenergized metal parts of electric equipment and metal raceways and cable sheaths shall be grounded and bonded to all metal pipes and rails at the portal and at intervals not exceeding 1000 feet (305 m) throughout the tunnel.

(2) Class 1, Class 2, and Class 3 remote control, signaling, and power-limited circuits.

(a) Classification. Class 1, Class 2, or Class 3 remote control, signaling, or power-limited circuits are characterized by their usage and electrical power limitation which differentiates them from light and power circuits. These circuits are classified in accordance with their respective voltage and power limitations as summarized in (a)(i) through (iii) of this subsection.

(i) Class 1 circuits.

(A) A Class 1 power-limited circuit is supplied from a source having a rated output of not more than 30 volts and 1000 volt-amperes.

(B) A Class 1 remote control circuit or a Class 1 signaling circuit has a voltage which does not exceed 600 volts; however, the power output of the source need not be limited.

(ii) Class 2 and Class 3 circuits.

(A) Power for Class 2 and Class 3 circuits is limited either inherently (in which no overcurrent protection is required) or by a combination of a power source and overcurrent protection.

(B) The maximum circuit voltage is 150 volts AC or DC for a Class 2 inherently limited power source, and 100 volts AC or DC for a Class 3 inherently limited power source.

(C) The maximum circuit voltage is 30 volts AC and 60 volts DC for a Class 2 power source limited by overcurrent protection, and 150 volts AC or DC for a Class 3 power source limited by overcurrent protection.

(iii) Application. The maximum circuit voltages in (a)(i) and (ii) of this subsection apply to sinusoidal AC or continuous DC power sources, and where wet contact occurrence is not likely.

(b) Marking. A Class 2 or Class 3 power supply unit shall not be used unless it is durably marked where plainly visible to indicate the class of supply and its electrical rating.

(3) Communications systems.

(a) Scope. These provisions for communication systems apply to such systems as central-station-connected and noncentral-station-connected telephone circuits, radio receiving and transmitting equipment, and outside wiring for fire and burglar alarm, and similar central station systems. These installations need not comply with the provisions of WAC 296-155-444 through 296-155-459(2), except WAC 296-155-447 (3)(a)(ii) and 296-155-456.

(b) Protective devices.

(i) Circuits exposed to power conductors. Communication circuits so located as to be exposed to accidental contact with light or power conductors operating at over 300 volts shall have each circuit so exposed provided with an approved protector.

(ii) Antenna lead-ins. Each conductor of a lead-in from an outdoor antenna shall be provided with an antenna discharge unit or other means that will drain static charges from the antenna system.

(c) Conductor location.

(i) Outside of buildings.

(A) Receiving distribution lead-in or aerial-drop cables attached to buildings and lead-in conductors to radio transmitters shall be so installed as to avoid the possibility of accidental contact with electric light or power conductors.

(B) The clearance between lead-in conductors and any lightning protection conductors shall not be less than 6 feet (1.83 m).

(ii) On poles. Where practicable, communication conductors on poles shall be located below the light or power conductors. Communications conductors shall not be attached to a crossarm that carries light or power conductors.

(iii) Inside of buildings. Indoor antennas, lead-ins, and other communication conductors attached as open conductors to the inside of buildings shall be located at least 2 inches (50.8 mm) from conductors of any light or power or Class 1 circuits unless a special and equally protective method of conductor separation is employed.

(d) Equipment location. Outdoor metal structures supporting antennas, as well as self-supporting antennas such as vertical rods or dipole structures, shall be located as far away from overhead conductors of electric light and power circuits of over 150 volts to ground as necessary to avoid the possibility of the antenna or structure falling into or making accidental contact with such circuits.

(e) Grounding.

(i) Lead-in conductors. If exposed to contact with electric light or power conductors, the metal sheath of aerial cables entering buildings shall be grounded or shall be interrupted close to the entrance to the building by an insulating joint or equivalent device. Where protective devices are used, they shall be grounded.

(ii) Antenna structures. Masts and metal structures supporting antennas shall be permanently and effectively grounded without splice or connection in the grounding conductor.

(iii) Equipment enclosures. Transmitters shall be enclosed in a metal frame or grill or separated from the operating space by a barrier, all metallic parts of which are effectively connected to ground. All external metal handles and controls accessible to the operating personnel shall be effectively grounded. Unpowered equipment and enclosures shall be considered grounded where connected to an attached coaxial cable with an effectively grounded metallic shield.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-459, filed 9/22/93, effective 11/1/93; 88-11-021 (Order 88-04), § 296-155-459, filed 5/11/88.]

**WAC 296-155-462 Definitions applicable to this part.** The definitions given in this section apply to the terms used in Part I. The definitions given here for "approved" and "qualified person" apply, instead of the definitions given in WAC 296-155-012, to the use of these terms in Part I.

(1) "Acceptable." An installation or equipment is acceptable to the director, and approved within the meaning of this Part I:

(a) If it is accepted, certified, listed, labeled, or otherwise determined to be safe by a qualified testing laboratory capable of determining the suitability of materials and equipment for installation and use in accordance with this standard; or

(b) With respect to an installation or equipment of a kind which no qualified testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another state agency, or by a federal, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with those provisions; or

(c) With respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by a particular customer, if it is determined to be safe for its intended use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the director and his/her authorized representatives.

(2) "Accepted." An installation is "accepted" if it has been inspected and found to be safe by a qualified testing laboratory.

(3) "Accessible." (As applied to wiring methods.) Capable of being removed or exposed without damaging the building structure or finish, or not permanently closed in by the structure or finish of the building. (See "concealed" and "exposed.")

(4) "Accessible." (As applied to equipment.) Admitting close approach; not guarded by locked doors, elevation, or other effective means. (See "readily accessible.")

(5) "Ampacity." The current in amperes a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

(6) "Appliances." Utilization equipment, generally other than industrial, normally built in standardized sizes or types, which is installed or connected as a unit to perform one or more functions.

(7) "Approved." 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 WAC 296-155-006 shall apply.

(8) "Askarel." A generic term for a group of nonflammable synthetic chlorinated hydrocarbons used as electrical insulating media. Askarels of various compositional types are used. Under arcing conditions the gases produced, while consisting predominantly of noncombustible hydrogen chloride, can include varying amounts of combustible gases depending upon the askarel type.

(9) "Attachment plug (plug cap) (cap)." A device which, by insertion in a receptacle, establishes connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle.

(10) "Automatic." Self-acting, operating by its own mechanism when actuated by some impersonal influence, as for example, a change in current strength, pressure, temperature, or mechanical configuration.

(11) "Bare conductor." See "conductor."

(12) "Bonding." The permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed.

(13) "Bonding jumper." A reliable conductor to assure the required electrical conductivity between metal parts required to be electrically connected.

(14) "Branch circuits." That portion of a wiring system extending beyond the final overcurrent device protecting the circuit. (A device not approved for branch circuit protection, such as thermal cutout or motor overload protective device, is not considered as the overcurrent device protecting the circuit.)

(15) "Building." A structure which stands alone or which is cut off from adjoining structures by fire walls with all openings therein protected by approved fire doors.

(16) "Cabinet." An enclosure designed either for surface or flush mounting, and provided with a frame, mat, or trim in which a swinging door or doors are or may be hung.

(17) "Certified." Equipment is "certified" if it:

(a) Has been tested and found by a qualified testing laboratory to meet applicable test standards or to be safe for use in a specified manner; and

(b) Is of a kind whose production is periodically inspected by a qualified testing laboratory. Certified equipment must bear a label, tag, or other record of certification.

(18) "Circuit breaker."

(a) (600 volts nominal, or less.) A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without injury to itself when properly applied within its rating.

(b) (Over 600 volts, nominal.) A switching device capable of making, carrying, and breaking currents under normal circuit conditions, and also making, carrying for a specified time, and breaking currents under specified abnormal circuit conditions, such as those of short circuit.

(19) "Class I locations." Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitible mixtures. Class I locations include the following:

(a) Class I, Division 1. A Class I, Division 1 location is a location:

(i) In which ignitible concentrations of flammable gases or vapors may exist under normal operating conditions; or

(ii) In which ignitible concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or

(iii) In which breakdown or faulty operation of equipment or processes might release ignitible concentrations of flammable gases or vapors, and might also cause simultaneous failure of electric equipment.

Note: This classification usually includes locations where volatile flammable liquids or liquefied flammable gases are transferred from one container to another; interiors of spray booths and areas in the vicinity of spraying and painting operations where volatile flammable solvents are used; locations containing open tanks or vats of volatile flammable liquids; drying rooms or compartments for the evaporation of flammable solvents; inadequately ventilated pump rooms for flammable gas or for volatile flammable liquids; and all other locations where ignitible concentrations of flammable vapors or gases are likely to occur in the course of normal operations.

(b) Class I, Division 2. A Class I, Division 2 location is a location:

(i) In which 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 case of abnormal operation of equipment; or

(ii) In which ignitible concentrations of gases or vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operations of the ventilating equipment; or

(iii) That is adjacent to a Class I, Division 1 location, and to which ignitible concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.

Note: This classification usually 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 operating condition. The quantity of flammable 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 merit consideration in determining the classification and extent of each location.

Piping without valves, checks, meters, and similar devices would not ordinarily introduce a hazardous condition even though used for flammable liquids or gases. Locations used for the storage of flammable liquids or of liquefied or compressed gases in sealed containers would not normally be considered hazardous unless also subject to other hazardous conditions.

Electrical conduits and their associated enclosures separated from process fluids by a single seal or barrier are classed as a Division 2 location if the outside of the conduit and enclosures is a nonhazardous location.

(20) "Class II locations." Class II locations are those that are hazardous because of the presence of combustible dust. Class II locations include the following:

(a) Class II, Division 1. A Class II, Division 1 location is a location:

(i) In which combustible dust is or may be in suspension in the air under normal operating conditions, in quantities sufficient to produce explosive or ignitible mixtures; or

(ii) Where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitible mixtures to be produced, and might also provide a source of ignition through simultaneous failure of electric equipment, operation of protection devices, or from other causes; or

(iii) In which combustible dusts of an electrically conductive nature may be present.

Note: Combustible dusts which are electrically nonconductive include dusts produced in the handling and processing of grain and grain products, pulverized sugar and cocoa, dried egg and milk powders, pulverized spices, starch and pastes, potato and woodflour, oil meal from beans and seed, dried hay, and other organic materials which may produce combustible dusts when processed or handled. Dusts containing magnesium or aluminum are particularly hazardous and the use of extreme caution is necessary to avoid ignition and explosion.

(b) Class II, Division 2. A Class II, Division 2 location is a location in which:

(i) Combustible dust will not normally be in suspension in the air in quantities sufficient to produce explosive or ignitible mixtures, and dust accumulations are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus; or

(ii) Dust may be in suspension in the air as a result of infrequent malfunctioning of handling or processing equipment, and dust accumulations resulting therefrom may be ignitible by abnormal operation or failure of electrical equipment or other apparatus.

Note: This classification includes locations where dangerous concentrations of suspended dust would not be likely but where dust accumulations might form on or in the vicinity of electric equipment. These areas may contain equipment from which appreciable quantities of dust would escape under abnormal operating conditions or be adjacent to a Class II, Division 1 location, as described above, into which an explosive or ignitible concentration of dust may be put into suspension under abnormal operating conditions.

(21) "Class III locations." Class III locations are those that are hazardous because of the presence of easily ignitible fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitible mixtures. Class III locations include the following:

(a) Class III, Division 1. A Class III, Division 1 location is a location in which easily ignitible fibers or materials producing combustible flyings are handled, manufactured, or used.

Note: Easily ignitible fibers and flyings include rayon, cotton (including cotton linters and cotton waste), sisal or henequen, istle, jute, hemp, tow, cocoa fiber, oakum, baled waste kapok, Spanish moss, excelsior, sawdust, woodchips, and other material of similar nature.

(b) Class III, Division 2. A Class III, Division 2 location is a location in which easily ignitible fibers are stored or handled, except in process of manufacture.

Collector ring. A collector ring is an assembly of slip rings for transferring electrical energy from a stationary to a rotating member.

(22) "Collector ring." A collector ring is an assembly of slip rings for transferring electrical energy from a stationary to a rotating member.

(23) "Concealed." Rendered inaccessible by the structure or finish of the building. Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them. See "accessible. (As applied to wiring methods.)"

(24) "Conductor."

(a) Bare. A conductor having no covering or electrical insulation whatsoever.

(b) Covered. A conductor encased within material of composition or thickness that is not recognized as electrical insulation.

(c) Insulated. A conductor encased within material of composition and thickness that is recognized as electrical insulation.

(25) "Controller." A device or group of devices that serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected.

(26) "Covered conductor." See "conductor."

(27) "Cutout." (Over 600 volts, nominal.) An assembly of a fuse support with either a fuseholder, fuse carrier, or disconnecting blade. The fuseholder or fuse carrier may include a conducting element (fuse link), or may act as the disconnecting blade by the inclusion of a nonfusible member.

(28) "Cutout box." An enclosure designed for surface mounting and having swinging doors or covers secured directly to and telescoping with the walls of the box proper. (See "cabinet.")

(29) "Damp location." See "location."

(30) "Dead front." Without live parts exposed to a person on the operating side of the equipment.

(31) "Device." A unit of an electrical system which is intended to carry but not utilize electric energy.

(32) "Disconnecting means." A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.

(33) "Disconnecting (or isolating) switch." (Over 600 volts, nominal.) A mechanical switching device used for isolating a circuit or equipment from a source of power.

(34) "Dry location." See "location."

(35) "Enclosed." Surrounded by a case, housing, fence or walls which will prevent persons from accidentally contacting energized parts.

(36) "Enclosure." The case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage.

(37) "Equipment." A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like, used as a part of, or in connection with, an electrical installation.

(38) "Equipment grounding conductor." See "grounding conductor, equipment."

(39) "Explosion-proof apparatus." Apparatus enclosed in a case that is capable of withstanding an explosion of 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.

(40) "Exposed. (As applied to live parts.)" Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts not suitably guarded, isolated, or insulated. (See "accessible" and "concealed.")

(41) "Exposed. (As applied to wiring methods.)" On or attached to the surface or behind panels designed to allow access. See "accessible. (As applied to wiring methods.)"

(42) "Exposed. (For the purposes of WAC 296-155-459(4), Communications systems.)" Where the circuit is in such a position that in case of failure of supports or insulation, contact with another circuit may result.

(43) "Externally operable." Capable of being operated without exposing the operator to contact with live parts.

(44) "Feeder." All circuit conductors between the service equipment, or the generator switchboard of an isolated plant, and the final branch-circuit overcurrent device.

(45) "Festoon lighting." A string of outdoor lights suspended between two points more than 15 feet (4.57 m) apart.

(46) "Fitting." An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function.

(47) "Fuse." (Over 600 volts, nominal.) An overcurrent protective device with a circuit opening fusible part that is heated and severed by the passage of overcurrent through it. A fuse comprises all the parts that form a unit capable of performing the prescribed functions. It may or may not be the complete device necessary to connect it into an electrical circuit.

(48) "Ground." A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

(49) "Grounded." Connected to earth or to some conducting body that serves in place of the earth.

(50) "Grounded, effectively." (Over 600 volts, nominal.) Permanently connected to earth through a ground connection of sufficiently low impedance and having sufficient ampacity that ground fault current which may occur cannot build up to voltages dangerous to personnel.

(51) "Grounded conductor." A system or circuit conductor that is intentionally grounded.

(52) "Grounding conductor." A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode or electrodes.

(53) "Grounding conductor, equipment." The conductor used to connect the noncurrent-carrying metal parts of equipment, raceways, and other enclosures to the system grounded conductor and/or the grounding electrode conductor at the service equipment or at the source of a separately derived system.

(54) "Grounding electrode conductor." The conductor used to connect the grounding electrode to the equipment grounding conductor and/or to the grounded conductor of the circuit at the service equipment or at the source of a separately derived system.

(55) "Ground-fault circuit interrupter." A device for the protection of personnel that functions to deenergize a circuit or portion thereof within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit.

(56) "Guarded." Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach to a point of danger or contact by persons or objects.

(57) "Hazard." That condition, potential or inherent, which is likely to cause injury, death, or occupational disease.

(58) "Hoistway." Any shaftway, hatchway, well hole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate.

(59) "Identified (conductors or terminals)." Identified, as used in reference to a conductor or its terminal, means that such conductor or terminal can be recognized as grounded.

(60) "Identified (for the use)." Recognized as suitable for the specific purpose, function, use, environment, application, etc., where described as a requirement in this standard. Suitability of equipment for a specific purpose, environment, or application is determined by a qualified testing laboratory where such identification includes labeling or listing.

(61) "Insulated conductor." See "conductor."

(62) "Interrupter switch." (Over 600 volts, nominal.) A switch capable of making, carrying, and interrupting specified currents.

(63) "Intrinsically safe equipment and associated wiring." Equipment and associated wiring in which any spark or thermal effect, produced either normally or in specified fault conditions, is incapable, under certain prescribed test conditions, of causing ignition of a mixture of flammable or combustible material in air in its most easily ignitible concentration.

(64) "Isolated." Not readily accessible to persons unless special means for access are used.

(65) "Isolated power system." A system comprising an isolating transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors.

(66) "J-Box (junction box)." An electrical sheet metal enclosure with openings for conduit or cable with sheet metal cover. The primary purpose is for joining conductors for splicing.

(67) "Labeled." Equipment or materials to which has been attached a label, symbol or other identifying mark of a qualified testing laboratory which indicates compliance with appropriate standards or performance in a specified manner.

(68) "Lighting outlet." An outlet intended for the direct connection of a lampholder, a lighting fixture, or a pendant cord terminating in a lampholder.

(69) "Listed." Equipment or materials included in a list published by a qualified testing laboratory whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

(70) "Location."

(a) Damp location. Partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements.

(b) Dry location. A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.

(c) Wet location. Installations underground or in concrete slabs or masonry in direct contact with the earth, and locations subject to saturation with water or other liquids, such as locations exposed to weather and unprotected.

(71) "Mobile x-ray." X-ray equipment mounted on a permanent base with wheels and/or casters for moving while completely assembled.

(72) "Motor control center." An assembly of one or more enclosed sections having a common power bus and principally containing motor control units.

(73) "Outlet." A point on the wiring system at which current is taken to supply utilization equipment.

(74) "Overcurrent." Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload (see definition), short circuit, or ground fault. A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Hence the rules for overcurrent protection are specific for particular situations.

(75) "Overload." Operation of equipment in excess of normal, full load rating, or of a conductor in excess of rated ampacity which, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload. (See "overcurrent.")

(76) "Panelboard." A single panel or group of panel units designed for assembly in the form of a single panel; including buses, automatic overcurrent devices, and with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall or partition and accessible only from the front. (See "switchboard.")

(77) "Portable x-ray." X-ray equipment designed to be hand-carried.

(78) "Power fuse." (Over 600 volts, nominal.) See "fuse."

(79) "Power outlet." An enclosed assembly which may include receptacles, circuit breakers, fuseholders, fused switches, buses and watt-hour meter mounting means; intended to serve as a means for distributing power required to operate mobile or temporarily installed equipment.

(80) "Premises wiring system." That interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all of its associated hardware, fittings, and wiring devices, both permanently and temporarily installed, which extends from the load end of the service drop, or load end of the service lateral conductors to the outlet(s). Such wiring does not include wiring internal to appliances, fixtures, motors, controllers, motor control centers, and similar equipment.

(81) "Qualified person." One familiar with the construction and operation of the equipment and the hazards involved.

(82) "Qualified testing laboratory." A properly equipped and staffed testing laboratory which has capabilities for and which provides the following services:

(a) Experimental testing for safety of specified items of equipment and materials referred to in this standard to

determine compliance with appropriate test standards or performance in a specified manner;

(b) Inspecting the run of such items of equipment and materials at factories for product evaluation to assure compliance with the test standards;

(c) Service-value determinations through field inspections to monitor the proper use of labels on products and with authority for recall of the label in the event a hazardous product is installed;

(d) Employing a controlled procedure for identifying the listed and/or labeled equipment or materials tested; and

(e) Rendering creditable reports or findings that are objective and without bias of the tests and test methods employed.

(83) "Raceway." A channel designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this part. Raceways may be of metal or insulating material, and the term includes rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquidtight flexible metal conduit, flexible metallic tubing, flexible metal conduit, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

(84) "Readily accessible." Capable of being reached quickly for operation, renewal, or inspections, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. (See "accessible.")

(85) "Receptacle." A receptacle is a contact device installed at the outlet for the connection of a single attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is a single device containing two or more receptacles.

(86) "Receptacle outlet." An outlet where one or more receptacles are installed.

(87) "Remote-control circuit." Any electric circuit that controls any other circuit through a relay or an equivalent device.

(88) "Sealable equipment." Equipment enclosed in a case or cabinet that is provided with a means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. The equipment may or may not be operable without opening the enclosure.

(89) "Separately derived system." A premises wiring system whose power is derived from generator, transformer, or converter windings and has no direct electrical connection, including a solidly connected grounded circuit conductor, to supply conductors originating in another system.

(90) "Service." The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.

(91) "Service conductors." The supply conductors that extend from the street main or from transformers to the service equipment of the premises supplied.

(92) "Service drop." The overhead service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service-entrance conductors at the building or other structure.

(93) "Service-entrance conductors, overhead system." The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop.

(94) "Service-entrance conductors, underground system." The service conductors between the terminals of the service equipment and the point of connection to the service lateral. Where service equipment is located outside the building walls, there may be no service-entrance conductors, or they may be entirely outside the building.

(95) "Service equipment." The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

(96) "Service raceway." The raceway that encloses the service-entrance conductors.

(97) "Shock hazard." To exist at an accessible part in a circuit between the part and ground, or other accessible parts if the potential is more than 42.4 volts peak and the current through a 1,500-ohm load is more than 5 milliamperes.

(98) "Signaling circuit." Any electric circuit that energizes signaling equipment.

(99) "Switchboard." A large single panel, frame, or assembly of panels which have switches, buses, instruments, overcurrent and other protective devices mounted on the face or back or both. Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets. (See "panelboard.")

(100) "Switches."

(a) General-use switch. A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage.

(b) General-use snap switch. A form of general-use switch so constructed that it can be installed in flush device boxes or on outlet box covers, or otherwise used in conjunction with wiring systems recognized by this part.

(c) Isolating switch. A switch intended for isolating an electric circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means.

(d) Motor-circuit switch. A switch, rated in horsepower, capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage.

(101) "Switching devices." (Over 600 volts, nominal.) Devices designed to close and/or open one or more electric circuits. Included in this category are circuit breakers, cutouts, disconnecting (or isolating) switches, disconnecting means, and interrupter switches.

(102) "Transformer." A transformer is an apparatus for converting electrical power in an a-c system at one voltage or current into electrical power at some other voltage or current without the use of rotating parts.

(103) "Transportable x-ray." X-ray equipment installed in a vehicle or that may readily be disassembled for transport in a vehicle.

(104) "Utilization equipment." Utilization equipment means equipment which utilizes electric energy for mechanical, chemical, heating, lighting, or similar useful purpose.

(105) "Utilization system." A utilization system is a system which provides electric power and light for employee workplaces, and includes the premises wiring system and utilization equipment.

(106) "Ventilated." Provided with a means to permit circulation of air sufficient to remove an excess of heat, fumes, or vapors.

(107) "Volatile flammable liquid." A flammable liquid having a flash point below 38°C (100°F) or whose temperature is above its flash point, or a Class II combustible liquid having a vapor pressure not exceeding 40 psia (276 kPa) at 38°C (100°F) whose temperature is above its flash point.

(108) "Voltage." (Of a circuit.) The greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

(109) "Voltage, nominal." A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 120/240, 480Y/277, 600, etc.). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

(110) "Voltage to ground." For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

(111) "Watertight." So constructed that moisture will not enter the enclosure.

(112) "Weatherproof." So constructed or protected that exposure to the weather will not interfere with successful operation. Rainproof, raintight, or watertight equipment can fulfill the requirements for weatherproof where varying weather conditions other than wetness, such as snow, ice, dust, or temperature extremes, are not a factor.

(113) "Wet location." See "location."

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-155-462, filed 9/22/93, effective 11/1/93; 88-11-021 (Order 88-04), § 296-155-462, filed 5/11/88.]

## Chapter 296-200 WAC

## CONTRACTOR CERTIFICATE OF REGISTRATION RENEWALS—SECURITY—INSURANCE

WAC



**WAC 296-200-110 Verification of registration number by a city, town, or county.** Verification of the contractor registration number for the purpose of issuing a building permit shall mean verification only of the registration of the general or specialty contractor who is applying for the building permit.

[Statutory Authority: RCW 18.27.125. 93-23-043, § 296-200-110, filed 11/12/93, effective 12/13/93.]

**WAC 296-200-111 Verification of nonoriginal registration card by city, town, or county.** A city, town, or county may accept, for the purposes of verification, a copy of the original contractor registration card, which has been attested to by the person who applied for that original registration card and which is notarized.

[Statutory Authority: RCW 18.27.125. 93-23-043, § 296-200-111, filed 11/12/93, effective 12/13/93.]

**WAC 296-200-112 Liability to cities, towns, and counties for failure to verify contractor registration.** Failure to verify the contractor's registration number will result in liability, for the penalty amount specified in RCW 18.27.100 (6)(a), only to the city, town, or county that issued the building permit.

[Statutory Authority: RCW 18.27.125. 93-23-043, § 296-200-112, filed 11/12/93, effective 12/13/93.]

## Chapter 296-304 WAC

## SAFETY STANDARDS FOR SHIP REPAIRING, SHIPBUILDING AND SHIP-BREAKING

WAC



**WAC 296-304-020 Explosive and other dangerous atmospheres—Scope and application.** All sections of this chapter which include WAC 296-304-020 in the section number apply to explosive and other dangerous atmospheres.

(1) WAC 296-304-02003 to 296-304-02009 applies to ship repairing and shipbreaking.

(2) WAC 296-304-02011 applies to ship repairing.

(3) WAC 296-62-076 through 296-62-07672, relating to 4,4' Methylenedianiline (MDA) shall apply to every employee in every employment and place of employment covered by this chapter, in lieu of any different standard on exposure to MDA which would otherwise be applicable by virtue of those sections.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-304-020, filed 2/3/93, effective 3/15/93; Order 74-25, § 296-304-020, filed 5/7/74.]

**WAC 296-304-02003 Precautions before entering.** (1) Flammable atmospheres and residues.

(a) Before employees are initially permitted to enter any of the ship's spaces designated in (1) and (2) of this section, the atmosphere within the space to be entered shall be tested by a competent person to determine the concentration of flammable vapors or gases within the space.

(i) Cargo spaces or other spaces containing or having last contained combustible or flammable liquids or gases in bulk.

(ii) Spaces immediately adjacent to those described in (1) of this section.

(b) If the tests indicate that the atmosphere in the space to be entered contains a concentration of flammable vapor or gas greater than 10 percent of the lower explosive limit, the space shall be ventilated to reduce the concentration below 10 percent of the lower explosive limit before men are permitted to enter.

(c) If the atmosphere in the space to be entered is found to contain a concentration of flammable vapor or gas below the level immediately dangerous to life as defined in chapter 296-62 WAC Part E, but above the threshold limit value, employees shall be protected in accordance with the requirements of chapter 296-62 WAC Part E.

(2) Toxic atmospheres and residues.

(a) Before employees are initially permitted to enter any of the ship's spaces designated in (1), (2) and (3) of this section, the atmosphere in the space to be entered shall be tested for toxic atmospheric contaminants, and the space inspected for the presence of toxic or corrosive residues by a marine chemist, industrial hygienist or other person qualified to make these tests and inspections.

(i) Cargo spaces or other spaces containing or having last contained bulk liquids, gases, or solids of a toxic, corrosive, or irritant nature.

(ii) Spaces which have been fumigated.

(iii) Spaces immediately adjacent to those described in (1) and (2) of this section.

(b) If the tests indicate that the atmosphere in the space to be entered contains a concentration of toxic contaminants above the level which is immediately dangerous to life, the space shall be ventilated to reduce the concentration below the level immediately dangerous to life as defined in chapter 296-62 WAC Part E.

(c) If the atmosphere in the space to be entered is found to contain a concentration of toxic contaminants below the level immediately dangerous to life as defined in WAC 296-304-02003 (2)(a), but above the threshold limit value, employees shall be protected in accordance with the requirements of WAC 296-304-09003.

(d) The person qualified to make the tests and inspections referred to in (1)(a) of this section shall make a record of the tests, inspections and instructions pertaining to (1)(c) and (2)(b) and (c) of this section, which shall be available for inspection and kept on file in accordance with WAC 296-304-02001 (3)(b).

(3) Oxygen deficient atmospheres.

(a) Before employees are initially permitted to enter any of the ship's spaces designated in (1) through (3) of this section, the atmosphere in the spaces to be entered shall be tested by a competent person with an oxygen indicator or other suitable device to ensure that it contains at least 19.5 percent oxygen.

(i) Spaces in which the tests required by (1) and (2) of this section indicate that no flammable or toxic contaminants are present in the atmosphere.

(ii) Compartments which have been sealed.

(iii) Spaces which have been coated and closed up.

(iv) Nonventilated compartments which have been freshly painted.

(v) Cargo spaces containing cargoes or residues of cargoes which absorb oxygen, such as scrap iron, fresh fruit and molasses, and various vegetable drying oils in bulk.

(b) If the tests indicate that the atmosphere in the space to be entered contains less than 19.5 percent oxygen, the space shall be ventilated until tests indicate an oxygen content above this level.

(4) Exceptions. In emergencies and in cases of work of brief duration necessary to accomplish the ventilation required or to start operations, work may be performed in atmospheres containing concentrations of flammable contaminants above the upper explosive limit or otherwise immediately dangerous to life, provided employees are protected in accordance with the requirements of WAC 296-304-09003.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-304-02003, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-02003, filed 3/1/76; Order 74-25, § 296-304-02003, filed 5/7/74.]

**WAC 296-304-03001 Toxic cleaning solvents.** (1) When toxic solvents are used, the employer shall employ one or more of the following measures to safeguard the health of employees exposed to these solvents.

(a) The cleaning operation shall be completely enclosed to prevent the escape of vapor into the working space.

(b) Either natural ventilation or mechanical exhaust ventilation shall be used to remove the vapor at the source and to dilute the concentration of vapors in the working space to a concentration which is safe for the entire work period.

(c) Employees shall be protected against toxic vapors by suitable respiratory protective equipment in accordance with the requirements of WAC 296-304-09003 and, where necessary, against exposure of skin and eyes to contact with toxic solvents and their vapors by suitable clothing and equipment.

(2) The principles in the threshold limit values to which attention is directed in WAC 296-304-02005 and applicable sections in chapter 296-62 WAC will be used by the department of labor and industries in enforcement proceedings in defining a safe concentration of air contaminants.

(3) When flammable solvents are used, precautions shall be taken in accordance with the requirements of WAC 296-304-03009.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-304-03001, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-03001, filed 3/1/76; Order 74-25, § 296-304-03001, filed 5/7/74.]

**WAC 296-304-03005 Mechanical paint removers.** (1) Power tools.

(a) Employees engaged in the removal of paints, preservatives, rusts or other coatings by means of power tools shall be protected against eye injury by goggles or face shields in accordance with the requirements of WAC 296-304-09001(1).

(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, mechanical exhaust ventilation sufficient to keep the dust concentration to a minimum shall be used, or employees shall be protected by respiratory protective equipment in accordance with the requirements of WAC 296-304-09003.

(2) Flame removal.

(a) Hardened preservative coatings shall not be removed by flame in enclosed spaces unless the employees exposed to fumes are protected by air line respirators in accordance with the requirements of WAC 296-304-09003. Employees performing such an operation in the open air, and those exposed to the resulting fumes, shall be protected by a fume filter type respirator in accordance with requirements of WAC 296-304-09003.

(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. House 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) Abrasive blasters working in enclosed spaces shall be protected by hoods and air fed respirators or by air helmets of a positive pressure type in accordance with the requirements of WAC 296-304-09003.

(ii) Abrasive blasters working in the open shall be protected as indicated in (1) except that when synthetic abrasives containing less than one percent free silica are used filter type respirators approved by the Bureau of Mines for exposure to lead dusts may be used in accordance with WAC 296-304-09003.

(iii) Employees, other than blasters, including machine tenders and abrasive recovery men, working in areas where unsafe concentrations of abrasive materials and dusts are present shall be protected by eye and respiratory protective equipment in accordance with the requirements of WAC 296-304-09001 (1) and (2) and 296-304-09003.

(iv) The blaster shall be protected against injury from exposure to the blast by appropriate protective clothing, including gloves.

(v) Since surges from drops in pressure in the hose line can be of sufficient proportions to throw the blaster off the staging, the blaster shall be protected by a safety belt and life line tied off to the ship or other structure when blasting is being done from elevations where adequate protection against falling cannot be provided by railings.

[Statutory Authority: Chapter 49.17 RCW. 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.]

**WAC 296-304-03007 Painting.** (1) Paints mixed with toxic vehicles or solvents.

(a) When paints mixed with toxic vehicles or solvents are sprayed, the following conditions shall apply:

(i) In confined spaces, employees continuously exposed to such spraying shall be protected by air line respirators in accordance with the requirements of WAC 296-304-09003.

(ii) In tanks or compartments, employees continuously exposed to such spraying shall be protected by air line respirators in accordance with the requirements of WAC 296-304-09003. Where mechanical ventilation is provided, employees shall be protected by respirators in accordance with the requirements of WAC 296-304-09003.

(iii) In large and well ventilated areas, employees exposed to such spraying shall be protected by respirators in accordance with the requirements of WAC 296-304-09003.

(b) Where brush application of paints with toxic solvents is done in confined spaces, or other areas where lack of ventilation creates a hazard, employees shall be protected by filter respirators in accordance with the requirements of WAC 296-304-09003.

(c) When flammable paints or vehicles are used, precautions shall be taken in accordance with the requirements of WAC 296-304-03009.

(d) The metallic parts of air moving devices, including fans, blowers, and jet-type air movers, and all duct work shall be electrically bonded to the vessel's structure.

(2) Paints and tank coatings dissolved in highly volatile, toxic and flammable solvents. Several organic coatings, adhesives and resins are dissolved in highly toxic, flammable and explosive solvents with flash points below 80°F. Work involving such materials shall be done only when all of the following special precautions have been taken:

(a) Sufficient exhaust ventilation shall be provided to keep the concentration of solvent vapors below ten percent of the lower explosive limit. Frequent tests shall be made by a competent person to ascertain the concentration.

(b) If the ventilation fails or if the concentration of solvent vapors rises above ten percent of the lower explosive limit, painting shall be stopped and the compartment shall be evacuated until the concentration again falls below ten percent of the lower explosive limit. If the concentration does not fall when painting is stopped, additional ventilation to bring the concentration down to ten percent of the lower explosive limit shall be provided.

(c) Ventilation shall be continued after the completion of painting until the space or compartment is gas free. The final determination as to whether the space or compartment is gas free shall be made after the ventilating equipment has been shut off for a least ten minutes.

(d) Exhaust ducts shall discharge clear of working areas and away from sources of possible ignition. Periodic tests shall be made to ensure that the exhausted vapors are not

accumulating in other areas within or around the vessel or dry dock.

(e) All motors and control equipment shall be of the explosion-proof type. Fans shall have nonferrous blades. Portable air ducts shall also be of nonferrous materials. All motors and associated control equipment shall be properly maintained and grounded.

(f) Only nonsparking paint buckets, spray guns and tools shall be used. Metal parts of paint brushes and rollers shall be insulated. Staging shall be erected in a manner which ensures that it is nonsparking.

(g) Only explosion proof lights, approved by the Underwriters' Laboratories for use in Class I, Group D atmospheres, or approved as permissible by the U.S. Bureau of Mines or the U.S. Coast Guard, shall be used.

(h) A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

(i) The face, eyes, head, hands and all other exposed parts of the bodies of employees handling such highly volatile paints shall be protected. All footwear shall be nonsparking, such as rubbers, rubber boots or rubber soled shoes without nails. Coveralls or other outer clothing shall be of cotton. Rubber, rather than plastic gloves shall be used because of the danger of static sparks.

(j) No matches, lighted cigarettes, cigars, or pipes, and no cigarette lighters or ferrous articles shall be taken into the area where work is being done.

(k) All solvent drums taken into the compartment shall be placed on nonferrous surfaces and shall be grounded to the vessel. Metallic contact shall be maintained between containers and drums when materials are being transferred from one to another.

(l) Spray guns, paint pots, and metallic parts of connecting tubing shall be electrically bonded, and the bonded assembly shall be grounded to the vessel.

(m) All employees continuously in a compartment in which such painting is being performed, shall be protected by air line respirators in accordance with the requirements of WAC 296-304-09003 and by suitable protective clothing. Employees entering such compartments for a limited time shall be protected by filter cartridge type respirators in accordance with the requirements of WAC 296-304-09003.

(n) All employees doing exterior paint spraying with such paints shall be protected by suitable filter cartridge type respirators in accordance with the requirements of WAC 296-304-09003 and by suitable protective clothing.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-304-03007, filed 9/22/93, effective 11/1/93; Order 76-7, § 296-304-03007, filed 3/1/76; Order 74-25, § 296-304-03007, filed 5/7/74.]

**WAC 296-304-04001 Ventilation and protection in welding, cutting and heating.** (1) Mechanical ventilation requirements.

(a) For the purposes of this section, mechanical ventilation shall meet the following requirements:

(i) Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems.

(ii) General mechanical ventilation shall be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits.

(iii) Local exhaust ventilation shall consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system shall be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits.

(iv) Contaminated air exhausted from a working space shall be discharged into the open air or otherwise clear of the source of intake air.

(v) All air replacing that withdrawn shall be clean and respirable.

(vi) Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust or dirt from clothing, or for cleaning the work area.

(2) Welding, cutting and heating in confined spaces.

(a) Except as provided in WAC 296-304-04001 (2)(c) and (3)(b), either general mechanical or local exhaust ventilation meeting the requirements of (1) of this section shall be provided whenever welding, cutting or heating is performed in a confined space.

(b) The means of access shall be provided to a confined space and ventilation ducts to this space shall be arranged in accordance with WAC 296-304-05011 (2)(a) and (b).

(c) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators in accordance with the requirements of WAC 296-304-09003, and an employee on the outside of such a confined space shall be assigned to maintain communication with those working within it and to aid them in an emergency.

(3) Welding, cutting or heating of metals of toxic significance.

(a) Welding, cutting or heating in any enclosed spaces aboard the vessel involving the metals specified in this subsection shall be performed with either general mechanical or local exhaust ventilation meeting the requirements of (1) of this section.

(i) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials.

(ii) Lead base metals.

(iii) Cadmium-bearing filler materials.

(iv) Chromium-bearing metals or metals coated with chromium-bearing materials.

(b) Welding, cutting, or heating in any enclosed spaces aboard the vessel involving the metals specified in this subsection shall be performed with local exhaust ventilation in accordance with the requirements of (1) of this section or employees shall be protected by air line respirators in accordance with the requirements of WAC 296-304-09003.

(i) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials.

(ii) Cadmium-bearing or cadmium coated base metals.

(iii) Metals coated with mercury-bearing metals.

(iv) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air line respirators.

(c) Employees performing such operations in the open air shall be protected by filter type respirators in accordance

with the requirements of WAC 296-304-09003, except that employees performing such operations on beryllium-containing base or filler metals shall be protected by air line respirators in accordance with the requirements of WAC 296-304-09003.

(d) Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner.

(4) Inert-gas metal-arc welding.

(a) Since the inert-gas metal-arc welding process involves the production of ultraviolet radiation of intensities of 5 to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees shall not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

(i) The use of chlorinated solvents shall be kept at least two hundred feet from the exposed arc, and surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.

(ii) Helpers and other employees in the area not protected from the arc by screening as provided in WAC 206-304-04011(5) shall be protected by filter lenses meeting the requirements of WAC 296-304-09001 (1) and (3). When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type meeting the requirements of WAC 296-304-09001 (1) and (3) shall be worn under welding helmets or hand shields to protect the welder against flashes and radiant energy when either the helmet is lifted or the shield is removed.

(iii) Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields shall be free of leaks and openings, and free of highly reflective surfaces.

(iv) When inert-gas metal-arc welding is being performed on stainless steel, the requirements of (3)(b) of this section shall be met to protect against dangerous concentrations of nitrogen dioxide.

(5) General welding, cutting and heating.

(a) Welding, cutting and heating not involving conditions or materials described in (2), (3) or (4) of this section may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, suitable mechanical ventilation or respiratory protective equipment shall be provided.

(b) Employees performing any type of welding, cutting or heating shall be protected by suitable eye protective equipment in accordance with the requirements of WAC 296-304-09001 (1) and (3).

(6) Residues and cargos of metallic ores.

(a) Residues and cargos of metallic ores of toxic significance shall be removed from the area or protected from the heat before welding, cutting or heating is begun.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-304-04001, filed 9/22/93, effective 11/1/93; Order 74-25, § 296-304-04001, filed 5/7/74.]

**WAC 296-304-04005 Welding, cutting and heating in way of preservative coatings.** (1) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

(2) Precautions shall be taken to prevent ignition of highly flammable hardened preservative coatings. When coatings are determined to be highly flammable they shall be stripped from the area to be heated to prevent ignition. A 1 1/2-inch or larger fire hose with fog nozzle, which has been uncoiled and placed under pressure, shall be immediately available for instant use in the immediate vicinity, consistent with avoiding freezing of the hose.

(3) Protection against toxic preservative coatings.

(a) In enclosed spaces all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application or the employees shall be protected by air line respirators meeting the requirements of WAC 296-304-09003.

(b) In the open air employees shall be protected by a filter type respirator in accordance with the requirements of WAC 296-304-09003.

(4) Before welding, cutting or heating is commenced in enclosed spaces on metals covered by soft and greasy preservatives, the following precautions shall be taken:

(a) A competent person shall test the atmosphere in the space to ensure that it does not contain explosive vapors, since there is a possibility that some soft and greasy preservatives may have flash points below temperatures which may be expected to occur naturally. If such vapors are determined to be present, no hot work shall be commenced until such precautions have been taken as will ensure that the welding, cutting or heating can be performed in safety.

(b) The preservative coatings shall be removed for a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be cleaned. The prohibition contained in WAC 296-304-03005 (2)(b) shall apply.

(5) Immediately after welding, cutting or heating is commenced in enclosed spaces on metal covered by soft and greasy preservatives, and at frequent intervals thereafter, a competent person shall make tests to ensure that no flammable vapors are being produced by the coatings. If such vapors are determined to be present, the operation shall be stopped immediately and shall not be resumed until such additional precautions have been taken as are necessary to ensure that the operation can be resumed safely.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-304-04005, filed 9/22/93, effective 11/1/93; Order 74-25, § 296-304-04005, filed 5/7/74.]

**WAC 296-304-09003 Respiratory protection.** The respiratory protection requirements of the general occupational health standards, chapter 296-62 WAC Part E, shall apply.

[Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-304-09003, filed 9/22/93, effective 11/1/93. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-304-09003, filed 11/30/83; Order 74-25, § 296-304-09003, filed 5/7/74.]

## Chapter 296-306 WAC
## SAFETY STANDARDS FOR AGRICULTURE

WAC



**WAC 296-306-010 Purpose and scope.** (1) The standards in this chapter apply to all agricultural operations with one or more employees, when such employees are covered by the Washington Industrial Safety and Health Act (WISHA). Agriculture operations are defined as all operations necessary to farming and ranching, including maintenance of equipment and machinery, and planting, cultivating, growing or raising, keeping for sale, harvesting, or transporting on the farm or to the first place of processing any tree, plant, fruit, vegetable, animal, fowl, fish, or insects or products thereof. Agricultural operations include all employers in one or more of the following Standard Industrial Classification (SIC) Codes:

0111 Wheat
0115 Corn
0119 Cash Grains NEC, Barley, Peas, Lentils, Oats, etc.
0133 Sugar Cane and Sugar Beets
0134 Irish Potatoes - All Potatoes except Yams
0139 Field Crops - Hay, Hops, Mint, etc.
0161 Vegetables and Melons, All Inclusive
0171 All Berry Crops
0172 Grapes
0173 Tree Nuts
0175 Deciduous Tree Fruits
0179 Tree Fruits or Tree Nuts Not Elsewhere Classified
0181 Ornamental Floriculture and Nursery Products
0182 Food Crops Grown Under Cover
0191 General Farms, Primarily Crops
0211 Beef Cattle Feedlots
0212 Beef Cattle Except Feedlots - Cattle Ranches
0213 Hogs
0214 Sheep and Goats
0219 General Livestock Except Dairy and Poultry
0241 Dairy Farms
0251 Broiler, Fryer, and Roaster Chickens
0252 Chicken Eggs
0253 Turkeys and Turkey Eggs
0254 Poultry Hatcheries
0259 Poultry and Eggs Not Elsewhere Classified
0271 Fur Bearing Animals and Rabbits
0272 Horses
0273 Animal Aquaculture
0279 Animal Specialties Not Elsewhere Classified
0291 General Farms, Primarily Livestock and Animal Specialties
0711 Soil Preparation Services
0721 Crop Planting, Cultivating, and Protecting
0722 Crop Harvesting, Primarily by Machine
0751 Livestock Services, Except Veterinary
0761 Farm Labor Contractors
0811 Timber Tracts, Christmas Tree Growing, Tree Farms
0831 Forest Nurseries
0851 Forestry Services - Reforestation

(2) In the event that the provisions of this chapter conflict with the provisions contained in any other chapter of Title 296 WAC, this chapter shall prevail. Sections of other chapters 296-24 WAC apply only when specifically referenced in this chapter.

(3) When employees are assigned to perform tasks other than those directly related to agricultural operations, the proper chapter of Title 296 WAC shall apply.

Note: Such assignments may involve logging, mining, sawmills, etc., when the products of such activities are removed from the farm site for commercial distribution.

(4) The requirement that the employer shall develop and maintain a hazard communication program as required by WAC 296-62-054 through 296-62-05427 which will provide information to all employees relative to hazardous chemicals or substances to which they are exposed or may become exposed in the course of their employment, shall apply to chapter 296-306 WAC.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-010, filed 3/5/93, effective 6/1/93; 89-11-035 (Order 89-03), § 296-306-010, filed 5/15/89, effective 6/30/89; 88-14-108 (Order 88-11), § 296-306-010, filed 7/6/88. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-306-010, filed 7/31/79; Order 75-2, § 296-306-010, filed 1/24/75.]

**WAC 296-306-01001 Cadmium.** WAC 296-62-074 through 296-62-07451 shall apply to the exposure of every employee to cadmium in every employment and place of employment covered by chapter 296-306 WAC in lieu of any different standard on exposures to cadmium that would

otherwise be applicable by virtue of sections of chapter 296-306 WAC.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-306-01001, filed 3/13/93, effective 4/27/93.]

### WAC 296-306-012 Definitions applicable to all sections of this chapter.

Note: Meaning of words. Unless the context indicates otherwise, words used in this chapter shall have the meaning given in this section.

(1) "Approved" means approved by the director of the department of labor and industries or his 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 WAC 296-24-006 shall apply.

(2) "Authorized person" means 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.

(3) "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective action to eliminate them.

(4) "Department" means the department of labor and industries.

(5) "Director" means the director of the department of labor and industries, or designated representative.

(6) "Employer" means 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: *Provided,* That any person, partnership, or business entity not having employees, and who is covered by the industrial insurance act shall be considered both an employer and an employee.

(7) "Handling pesticides" means:

(a) Mixing, loading, transferring, or applying pesticides.

(b) Disposing of pesticides or pesticide containers.

(c) Handling opened containers of pesticides.

(d) Acting as a flagger.

(e) Cleaning, adjusting, handling, or repairing the parts of mixing, loading, or application equipment that may contain pesticide residues.

(f) Assisting with the application of pesticides.

(g) Entering a treated area outdoors after application of any soil fumigant to adjust or remove soil coverings such as tarpaulins.

(h) The term does not include any person who is only handling pesticide containers that have been emptied or cleaned according to pesticide product labeling instructions or, in the absence of such instructions, have been subjected to triple-rinsing or its equivalent.

(8) "Hazard" means that condition, potential or inherent, which can cause injury, death, or occupational disease.

(9) "Safety factor" means the ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

(10) "Shall" or "must" means mandatory.

(11) "Should" or "may" means recommended.

(12) "Standard safeguard" means a device designed and constructed with the object of removing the hazard of accident incidental to the machine, appliance, tool, building, or equipment to which it is attached.

Standard safeguards shall be constructed of either metal or wood or other suitable material or a combination of these. The final determination of the sufficiency of any safeguard rests with the director of the department of labor and industries through the division of safety.

(13) "Suitable" means that which fits, or has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

(14) "Working day," for the purpose of appeals and accident reporting, means a calendar day, except Saturdays, Sundays, and legal holidays, as set forth in RCW 1.16.050, as now or hereafter amended, and for the purposes of the computation of time within which an act is to be done under the provisions of this chapter, shall be computed by excluding the first working day and including the last working day.

(15) "Workmen," "personnel," "man," "person," "employee," and other terms of like meaning, unless the context of the provision containing such term indicates otherwise, mean an employee of an employer who is employed in the business of his 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 his personal labor for an employer whether by manual labor or otherwise.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-012, filed 3/5/93, effective 6/1/93. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-012, filed 4/22/87.]

### WAC 296-306-035 Accident prevention program.

(1) The agricultural employer shall instruct all employees, including temporary and seasonal employees, in safe working practices. Such instruction shall be tailored to the types of hazards to which the employees will be exposed.

(2) Each employer shall develop an accident prevention program tailored to the needs of the particular farm or agricultural operation and to the types of hazards involved.

(3) Agricultural employers shall give appropriate safety instruction to seasonal employees and temporary crews at the beginning of employment.

(4) The following are minimal program elements, for all agricultural employers, to be included in the safety orientation program:

(a) How, when, and where to report injuries and illnesses, and the location of first-aid facilities.

(b) How to report unsafe conditions and practices.

(c) The use and care of personal protective equipment.

(d) What to do in emergencies.

(e) Identification of hazardous chemicals or materials and the instruction for their safe use.

(f) An on-the-job review of the practices necessary to perform job assignments in a safe and healthful manner.

(5) The accident prevention program shall be outlined in writing.

(6) Every employer shall conduct foreman-crew safety meetings as follows:

(a) Foreman-crew safety meetings shall be held at least monthly or whenever there are significant changes in job assignments. These meetings shall be tailored to the particular operation or activity occurring at the time.

(b) Attendance shall be documented.

(c) Subjects discussed shall be documented in the form of minutes.

(d) Short-term operations, such as harvesting, that lasts less than one week, do not require foreman-crew safety meetings but only require initial safety orientation for the operation.

(7) Minutes of each foreman-crew safety meeting shall be prepared and maintained at the location where the majority of employees report to work each day.

(8) Minutes for foreman-crew safety meetings shall be retained by employers for one year, and shall be made available upon request to personnel of the department of labor and industries.

(9) Every employer shall conduct at least monthly walk-around safety inspections of active jobsites, materials, and equipment involved and operating procedures.

(a) The walk-around safety inspections shall be conducted by a management representative.

(b) A representative chosen by employees shall be invited and allowed to accompany the management representative on the walk-around safety inspection.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-035, filed 3/5/93, effective 6/1/93; Order 75-2, § 296-306-035, filed 1/24/75.]

**WAC 296-306-060 Personal protective equipment.** (1) Employers shall make certain that employees are protected from injury or impairment of any bodily function that might occur through absorption, inhalation or physical contact of any substance, vapor, radiation or mechanical irritant. Adequate protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices, shields and barriers shall be provided at no cost to the employees and used wherever appropriate. Such equipment shall be maintained in sanitary and reliable condition.

(2) If employees provide their own protective equipment, the employer shall require that such equipment be adequate, and properly maintained and sanitary.

(3) Eye protectors shall be required wherever workers are exposed to flying objects, welding or cutting glare, injurious liquids, injurious radiation or any combination of these. Eye protectors shall meet the criteria of the American National Standard for Occupational and Educational Eye and Face Protection.

(a) The employer shall provide and require employees to wear eye protection and gloves whenever opening or pouring out pesticide containers, mixing, loading, or transferring pesticides or pesticide solutions, or washing or cleaning pesticide containers or tanks containing pesticides or applying pesticides with hand-held equipment, or adjusting, cleaning, or repairing pesticide application equipment containing pesticides.

(b) Eye protection and gloves as required above shall be initially provided at no cost to the employee, including replacement due to normal wear and tear thereafter.

(c) Unless otherwise stated by the pesticide label, eye protection shall be either goggles, splash face shields, safety glasses with front, brow, and temple protection, or a full-face respirator.

(d) Unless otherwise stated by the pesticide label, gloves shall be made of chemical resistant material as defined in this section, such as neoprene, nitrile rubber, or PVC. Leather, cotton, or other absorbent-type gloves shall not be worn.

(e) When gloves must be used as required in this section, employees shall be provided with clean gloves at the beginning of the work shift and at any time during the shift if the gloves become contaminated on the inside. Clean gloves are unused gloves or previously used gloves that have been washed with soap and water, inside and outside.

(4) The respiratory protection requirements of the general occupational health standards, chapter 296-62 WAC, shall apply when respiratory protection is required by the pesticide label or when a permissible exposure limit of chemicals listed in the air contaminant standards of chapter 296-62 WAC are exceeded, or when respiratory protection is used to protect employees in oxygen-deficient atmospheres, or when respirators are used for emergency or rescue use.

(5) Pesticide personal protective equipment requirements.

(a) Any employee who works with or is exposed to pesticides shall use the clothing and personal protective equipment specified on the labeling for use of the product.

(b) Personal protective equipment (PPE) for pesticide use means devices and apparel that are required by pesticide labeling to be worn to protect the body from contact with pesticides or pesticide residues, including, but not limited to, coveralls, long-sleeved shirts, long-legged pants, and socks, chemical-resistant suits, chemical-resistant gloves, chemical-resistant footwear, respiratory protection devices, chemical-resistant aprons, chemical-resistant headgear, and protective eyewear.

(c) Provision. When personal protective equipment is specified by the labeling of any pesticide for any handling activity, the employer shall provide the appropriate personal protective equipment in clean and operating condition at no cost to the employee, including replacement due to normal wear and tear. Normal work clothing, including long-sleeved shirts, long-legged pants, and socks, do not need to be provided by employers.

(i) When "chemical-resistant" apparel is specified on the product labeling, it shall be made of material that allows no measurable movement of the pesticide being used through the material during use.

(ii) When "waterproof personal protective equipment" are specified on the product labeling, they shall be made of material that allows no measurable movement of water or aqueous solutions through the material during use.

(iii) When a "chemical-resistant suit" is required by the product labeling, it shall be a loose-fitting, one- or two-piece

chemical-resistant garment that covers, at a minimum, the entire body except head, hands, and feet.

(iv) When "coveralls" are specified on the product labeling, they shall be a loose-fitting, one- or two-piece garment, such as a cotton or cotton and polyester coveralls that cover, at a minimum, the entire body except head, hands, and feet. The pesticide product labeling may specify that coveralls be worn over another layer of clothing.

(v) Gloves shall be of the type specified by the product labeling. Gloves or glove linings made of leather, cotton, or other absorbent material may not be worn for the handling activities unless they are listed on the product labeling as acceptable for such use.

(vi) When "chemical-resistant footwear" is specified by the product labeling, one of the following types of footwear must be worn:

(A) Chemical-resistant shoes.

(B) Chemical-resistant boots.

(C) Chemical-resistant shoe coverings worn over shoes or boots.

(vii) When "protective eyewear" is specified by the product labeling, one of the following types of eyewear must be worn:

(A) Goggles.

(B) Face shield.

(C) Safety glasses with front, brow, and temple protection.

(D) Full-face respirator.

(viii) When a "chemical-resistant apron" is specified by the product labeling, an apron that covers the front of the body from mid-chest to the knees shall be worn.

(ix) When a respirator is specified by the product labeling, it shall be appropriate for the pesticide product used and for the activity to be performed. The employer shall assure that the respirator fits correctly by using procedures consistent with WAC 296-62-071. If the label does not specify the type of respirator to be used, it shall meet the requirements of WAC 296-62-071.

(x) When "chemical-resistant headgear" is required, it shall be either a chemical-resistant hood or a chemical-resistant hat with a wide brim.

(d) Exceptions to personal protective equipment specified on product labeling.

(i) Body protection.

(A) A chemical-resistant suit may be substituted for "coveralls," and any requirement for an additional layer of clothing beneath is waived.

(B) A chemical-resistant suit may be substituted for "coveralls" and a chemical-resistant apron.

(ii) Boots. If chemical-resistant footwear with sufficient durability and a tread appropriate for wear in rough terrain is not obtainable, then leather boots may be worn in such terrain.

(iii) Gloves. If chemical-resistant gloves with sufficient durability and suppleness are not obtainable, then during handling activities with roses and other plants with sharp thorns, leather gloves may be worn over chemical-resistant glove liners. However, once leather gloves are worn for protection from pesticide exposure, thereafter they only shall be worn with chemical-resistant liners and they shall not be worn for any other use.

(iv) Closed systems. If handling tasks are performed using properly functioning systems designed by the manufacturer to enclose the pesticide to prevent it from contacting handlers or other persons and such systems are used and are maintained in accordance with that manufacturer's written operating instructions, exceptions to labeling-specified personal protective equipment for the handling activity are permitted as provided in (d)(iv)(A) and (B) of this subsection.

(A) Persons using a closed system to mix or load pesticides with a signal word of DANGER or WARNING may substitute a long-sleeved shirt, long-legged pants, shoes, socks, chemical-resistant apron, and any protective gloves specified on the labeling for handlers for the labeling-specified personal protective equipment.

(B) Persons using a closed system to mix or load pesticides other than those in (d)(iv)(A) of this subsection or to perform other handling tasks may substitute a long-sleeved shirt, long-legged pants, shoes, and socks for the labeling-specified personal protective equipment.

(C) Persons using a closed system that operates under pressure shall wear protective eyewear.

(D) Persons using a closed system shall have all personal protective equipment specified on the pesticide label immediately available for use in an emergency.

(v) Enclosed cabs. If handling tasks are performed from inside a cab that has a nonporous barrier which totally surrounds the occupants of the cab and prevents contact with pesticides outside the cab, exceptions to personal protective equipment specified on the product labeling for that handling activity are permitted as provided in (d)(v)(A) through (C) of this section.

(A) Persons occupying an enclosed cab may substitute a long-sleeved shirt, long-legged pants, shoes, and socks for the labeling-specified personal protective equipment. If a respiratory protection device is specified on the pesticide product labeling for the handling activity, it must be worn.

(B) Persons occupying an enclosed cab that has a properly functioning ventilation system which is used and maintained in accordance with the manufacturer's written operating instructions and which is declared in writing by the manufacturer and by a governmental agency to provide respiratory protection equivalent to or greater than a dust/mist filtering respirator may substitute a long-sleeved shirt, long-legged pants, shoes, and socks for the labeling-specified personal protective equipment. If a respiratory protection device other than a dust/mist filtering respirator is specified on the pesticide product labeling, it must be worn.

(C) Persons occupying an enclosed cab that has a properly functioning ventilation system which is used and maintained in accordance with the manufacturer's written operating instructions and which is declared in writing by the manufacturer and by a governmental agency to provide respiratory protection equivalent to or greater than the vapor- or gas-removing respirator specified on the pesticide product labeling may substitute a long-sleeved shirt, long-legged pants, shoes, and socks for the labeling-specified personal protective equipment. If an air-supplying respirator or a self-contained breathing apparatus (SCBA) is specified on the pesticide product labeling, it must be worn.

(D) Persons occupying an enclosed cab shall have all labeling-specified personal protective equipment immediately available inside the cab and shall wear such personal protective equipment if it is necessary to exit the cab and contact pesticide-treated surfaces in the treated area. Once personal protective equipment is worn in the treated area, it may not be worn into or taken into the cab. It must be removed before reentering the cab and must be stored outside the cab or be taken into the cab only in a closed chemical-resistant container. Occupants of an enclosed cab may exit and reenter the cab for the purposes of limited repairs or adjustments to the equipment after spraying is stopped and the vehicle is moved at least 20 feet outside the treated area.

(e) Use of personal protective equipment.

(i) The employer shall assure that personal protective equipment is used correctly for its intended purpose and is used according to the manufacturer's instructions.

(ii) The employer shall assure that, before each use, all personal protective equipment is inspected for leaks, holes, tears, or worn places, and any damaged equipment is repaired or discarded.

(iii) The employee shall use the provided personal protective equipment in accordance with instructions and training received.

(iv) The employee shall notify the employer of any defects in personal protective equipment or when the equipment becomes contaminated.

(f) Cleaning and maintenance of personal protective equipment.

(i) The employer shall launder or have laundered all label-specified personal protective equipment, including long-sleeved shirts, long-legged pants and socks, according to the manufacturer's instructions or pesticide product labeling instructions before each day of reuse. In the absence of any such instructions, it shall be washed thoroughly in detergent and hot water.

(ii) If any personal protective equipment cannot be cleaned properly, the employer shall dispose of the personal protective equipment in accordance with any applicable federal, state, and local regulations. Coveralls or other absorbent materials that have been drenched or heavily contaminated with an undiluted pesticide that has the signal word DANGER or WARNING on the label shall not be reused.

(iii) The employer shall assure that contaminated personal protective equipment is kept separately and washed separately from any other clothing or laundry.

(iv) The employer shall assure that all clean personal protective equipment shall be dried thoroughly before being stored or put in a well-ventilated place to dry.

(v) The employer shall assure that all personal protective equipment is stored separately from personal clothing and apart from pesticide-contaminated areas.

(vi) The employer shall assure that when dust/mist filtering respirators are used, the filters shall be replaced:

(A) When breathing resistance becomes excessive.

(B) When the filter element has physical damage or tears.

(C) According to manufacturer's recommendations or pesticide product labeling, whichever is more frequent.

(D) In the absence of any other instructions or indications of service life, after eight hours of use.

(vii) The employer shall assure that when gas- and vapor-removing respirators are used the gas- or vapor-removing canisters or cartridges shall be replaced:

(A) At the first indication of odor, taste, or irritation.

(B) According to the manufacturer's recommendations or pesticide product labeling, whichever is more frequent.

(C) In the absence of any other instructions or indications of service life, after eight hours of use.

(viii) The employer shall inform any person who cleans or launders personal protective equipment for the employer and is not the wearer:

(A) That such equipment may be contaminated with pesticides.

(B) The name of the pesticides that may have contaminated this personal protective equipment.

(ix) The employer shall assure that handlers have clean place(s) away from pesticide-storage and pesticide-use areas where they may:

(A) Store personal clothing not in use.

(B) Put on label-specified personal protective equipment at the start of any exposure period.

(C) Remove label-specified personal protective equipment at the end of any exposure period.

(x) The employer shall not allow or direct any handler to wear home or to take home label-specified personal protective equipment, including long-sleeved shirts, long-legged pants or socks contaminated with pesticides.

(g) Heat-related illness. When the use of personal protective equipment is specified by the labeling of any pesticide for the handling activity, the employer shall assure that no handler is allowed or directed to perform the handling activity unless the appropriate measures are implemented if necessary to prevent heat-related illness.

(6) Employers shall instruct each employee in the proper use of any item of personal protective equipment used. Such instruction shall include, but not be limited to, any special limitations or precautions indicated by the manufacturer.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-060, filed 3/5/93, effective 6/1/93. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-306-060, filed 11/30/83; Order 75-2, § 296-306-060, filed 1/24/75.]

**WAC 296-306-061 Machinery and machine guarding.** Chapter 296-24 WAC, Part C shall apply to agriculture equipment effective February 1, 1994. Note: The delayed implementation date is to provide the opportunity for the department, agriculture industry, and farmworker advocates to develop agriculture specific machinery and machine guarding requirements for equipment that is unique to agriculture, which will take precedence over the requirements of chapter 296-24 WAC, Part C.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-061, filed 3/5/93, effective 6/1/93.]

**WAC 296-306-070 Reserved.**

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-070, filed 3/5/93, effective 6/1/93; Order 75-2, § 296-306-070, filed 1/24/75.]

**WAC 296-306-084 Portable abrasive wheels.**

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-084, filed 3/5/93, effective 6/1/93.]

**WAC 296-306-105 Orchard ladders.** (1) Construction of orchard ladders. Orchard ladders purchased or built on or after the effective date of this section shall meet the following construction requirements:

(a) Orchard ladders longer than 16' shall not be used.

(b) The minimum dimensions of the parts of wood orchard ladders shall not be less than the following when made of group 2 or group 3 woods. (See Table S-2 for wood groups.)

| | Length 6 to 10 ft. | | Length 12 to 16 ft. | |
|---|---|---|---|---|
| | Thickness (inches) | Depth (inches) | Thickness (inches) | Depth (inches) |
| Side Rails | 25/32 | 2 5/8 | 25/32 | 2 3/4 |
| Back leg | 1 1/2 | 1 1/2 | 1 5/8 | 1 5/8 |
| Steps | 25/32 | 2 5/8 | 25/32 | 2 5/8 |
| Top | 25/32 | 5 | 25/32 | 5 |

Note: The minimum thickness of side rails provides for the cutting of a groove 1/8" in depth with a tolerance of ±1/32". The thickness of the side rail shall be increased when grooves of greater depth are used.

(c) Steps shall be closely fitted into grooves in the side rails 1/8" in depth and secured with at least two 6d nails or equivalent; or they shall be closely fitted into metal brackets of equivalent strength, which in turn shall be firmly secured to the side rails.

(i) Each step shall be reinforced by:

(A) A steel rod not less than 0.160" in diameter, which shall pass through metal washers of sufficient size to prevent pressing into the side rails, and through a truss block which shall be fitted between the rod and the center of each step; or

(B) A metal angle brace on each end firmly secured to the steps and side rails; or

(C) Construction of equivalent strength and safety.

(ii) Where the rod reinforcement construction is used, the bottom step shall be provided further with a metal angle brace on each end which shall be securely attached to the bottom step and side rails.

(iii) All steps 27" or more in length shall be provided with a metal angle brace at each end securely attached to the step and rail.

(d) Width and spread. The minimum width between side rails at the step of highest allowable standing, shall be not less than 9 1/2". From top to bottom the side rails shall spread at least an average of 2 1/2" for each foot of ladder length.

(e) Top. All orchard ladders shall have a top with wood or metal brackets or fittings tightly secured to the top, side rails, and back leg without excessive play or wear at the joints.

(f) Aluminum ladders shall be constructed out of 6061-T6 aluminum alloy or equivalent.

(g) Steps on metal ladders shall be corrugated, knurled, dimpled, or otherwise treated to minimize the possibility of slipping.

TABLE S-2
GROUPING OF WOODS

Group 1

| | |
|---|---|
| White Ash | Locust |
| Beech | Hard Maple |
| Birch | Red Oak |
| Rock Elm | White Oak |
| Hickory | Pecan |
| | Persimmon |

Group 2

Douglas Fir (coast region)
Western Larch
Southern Yellow Pine

Group 3

| | |
|---|---|
| Red Alder | Gum |
| Oregon Ash | West Coast Hemlock |
| Pumpkin Ash | Magnolia |
| Alaska Cedar | Oregon Maple |
| Port Orford Cedar | Norway Pine |
| Cypress | Poplar |
| Soft Elm | Redwood |
| Douglas Fir (Rocky Mtn. Region) | Eastern Spruce |
| | Sitka Spruce |
| | Sycamore |
| | Tamarack |
| Noble Fir | Tupelo |

Group 4

| | |
|---|---|
| Aspen | Eastern Hemlock |
| Bashwood | Holly |
| Buckeye | Soft Maple |
| Butternut | Idaho White Pine |
| Incense Cedar | Northern White Pine |
| Western Red Cedar | Ponderosa Pine |
| Black Cottonwood | Sugar Pine |
| White Fir | |
| Hackberry | |

(2) Training and instruction on the use of ladders.

(a) At the beginning of employment, employers shall provide employees with orientation and training on the proper use of ladders including how to set a ladder and properly dismount with a full load.

(b) Employers shall instruct employees to not stand on the top two steps (the top cap and the next step down) of the ladder.

(c) Employers shall instruct employees to not step off the ladder onto branches of trees except onto the main crotch of the tree.

(d) Employers shall instruct employees to not overreach while standing on the ladder to prevent ladder upset.

(3) Care and use of orchard ladders.

(a) Employers shall not require or direct employees to stand on the top two steps of the orchard ladder.

(b) Orchard ladders shall be maintained in good condition at all times. Joints between steps and side rails shall be tight. All hardware and fittings shall be securely attached,

and the moveable parts shall operate freely without binding or undue play.

(c) Ladders shall be inspected prior to being used. Those ladders which have developed defects shall be withdrawn from service for repair or discard.

(d) Rungs shall be kept reasonably free of any substance which would make them hazardous.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-105, filed 3/5/93, effective 6/1/93; Order 75-2, § 296-306-105, filed 1/24/75.]

**WAC 296-306-115 Bins, bunkers, hoppers, tanks, pits and trenches.** (1) No employee shall enter any bin, bunker, hopper or similar area when there is a danger that loose materials (such as chips, sand, grain, gravel, sawdust, etc.) may collapse around the worker, unless the worker wears a safety belt with a lifeline attached and is attended by a helper.

Note: Silage pits are exempt from this section.

(2) When employees are required to work in a trench or a pit 4 feet or more in depth, the trench or the pit shall be shored or shall be sloped to the angle of repose as shown in the following table:

TABLE A-1
MAXIMUM ALLOWABLE SLOPES

| SOIL OR ROCK TYPE | MAXIMUM ALLOWABLE SLOPES (H:V)[1] FOR EXCAVATIONS LESS THAN 20 FEET (6.1 M) |
|---|---|
| STABLE ROCK<br>TYPE A [2]<br>TYPE B<br>TYPE C | VERTICAL (90°)<br>3/4:1 (53°)<br>1:1 (45°)<br>1½:1 (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. A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 1/4H:1V (75°).
3. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

(3) Requirements—Classification of soil and rock deposits.

(a) Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, B, or C according to the definitions set forth in WAC 296-155-66401.

(b) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests in recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-115, filed 3/5/93, effective 6/1/93; Order 75-2, § 296-306-115, filed 1/24/75.]

**WAC 296-306-145 Electrical.** Chapter 296-24 WAC, Part L shall apply to agriculture industry effective February 1, 1994. Note: The delayed implementation date is to provide the opportunity for the department, agriculture industry, and farmworker advocates to develop electrical requirements for electrical applications that are unique to agriculture, which will take precedence over the requirements of chapter 296-24 WAC, Part L.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-145, filed 3/5/93, effective 6/1/93; Order 76-28, § 296-306-145, filed 9/28/76; Order 75-2, § 296-306-145, filed 1/24/75.]

**WAC 296-306-165 General requirements for all agricultural equipment.** (1) Definitions.

(a) "Agricultural equipment" means equipment used in production or handling of agricultural products.

(b) "Agricultural field equipment" means tractors, self-propelled implements, implements and combinations thereof used in agricultural operations.

(c) "Agricultural tractor" means a two-wheel or four-wheel drive type vehicle, or a track vehicle, of more than twenty net engine horsepower (continuous brake power rating per Society of Automotive Engineers (SAE) J816b - or the power recommended by the manufacturer for satisfactory operation under the manufacturer specified continuous duty conditions), designed to furnish the power to pull, carry, propel, or drive implements that are designed for agriculture. All self-propelled implements are excluded.

(d) "Augers" means screw conveyors and related accessories designed primarily for conveying agricultural materials on farms.

(e) "Constant-running drives" means those drives which continue to rotate when the engine is running. (With all clutches disengaged.)

(f) "Farm field equipment" means tractors or implements, including self-propelled implements, or any combination thereof used in agricultural operations.

(g) "Farmstead equipment" means agricultural equipment normally used in a stationary manner. This includes, but is not limited to, materials handling equipment and accessories for such equipment whether or not the equipment is an integral part of a building.

(h) "Guarding by location" means a component may be considered guarded by location when, because of its location, it does not present a hazard during operation or maintenance. A component seven feet or more above a working surface is considered guarded by location.

(i) "Ground-drive equipment" means equipment using power supplied by its pulled wheels to move gears, chains, sprockets, belts, pulleys, augers, tines, etc.

(j) "Low profile tractor" means a wheel or track equipped vehicle possessing the following characteristics:

(i) The front wheel spacing is equal to the rear wheel spacing, as measured from the centerline of each right wheel to the centerline of the corresponding left wheel.

(ii) The clearance from the bottom of the tractor chassis to the ground does not exceed eighteen inches.

(iii) The highest point of the hood does not exceed sixty inches, and

(iv) The tractor is designed so that the operator straddles the transmission when seated.

(k) A "guard" or "shield" is a barrier which insures that no part of an employee may come into contact with a hazard created by a moving machinery part.

(l) "Power take-off shafts" are the shafts and knuckles between the tractor, or other power source, and the first gear set, pulley, sprocket, or other components on power take-off shaft driven equipment.

(2) Immediate priority shall be given to guarding of power take-off drives on all tractors and equipment. These must be guarded no later than January 1, 1976.

(3) All other power transmission components must be guarded on all equipment manufactured on or after January 1, 1976.

(4) If unguarded power transmission components on older field equipment show evidence that they were once guarded, the guards shall be replaced by January 1, 1976.

(5) The manufacturer's instruction manual, if published by the manufacturer and currently available, shall be the source of information for the safe operation and maintenance of field equipment.

(6) The employer shall establish a written program consisting of an energy control procedure, employee training, and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine, equipment, system, or process shall be isolated, and rendered inoperative. Whenever major replacement, repair, renovation, relocation, or modification of machines or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.

(7) Operating instructions. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all covered equipment with which he is or will be involved, including at least the following safe operating practices:

(a) Keep all guards in place when the machine is in operation;

(b) Passengers, other than persons required for instruction or machine operation shall not be permitted to ride on equipment unless a passenger seat or other protective device is provided.

(c) Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment;

(d) Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine;

(e) Lock out electrical power before performing maintenance or service on farmstead equipment.

(8) Methods of guarding. Except as otherwise provided in this chapter, each employer shall protect employees from coming into contact with moving machinery parts as follows:

(a) Through the installation and use of a guard or shield or guarding by location;

(b) Whenever a guard or shield or guarding by location is infeasible, by using a guardrail or fence.

(9) Strength and design of guards.

(a) Where guards are used to provide the protection required by this section, they shall be designed and located to prevent inadvertent contact with the hazard being guarded.

(b) Unless otherwise specified, each guard and its supports shall be capable of withstanding the force that a two hundred fifty pound individual, leaning on or falling against the guard, would exert upon that guard.

(c) Guards shall be free from burrs, sharp edges, and sharp corners, and shall be securely fastened to the equipment or building.

(10) Guarding by railings. Guardrails or fences shall be capable of preventing employees from inadvertently entering the hazardous area.

(11) Servicing and maintenance. Whenever a moving machinery part presents a hazard during servicing or maintenance, the engine shall be stopped, the power source disconnected, and all machine movement stopped before servicing or maintenance is performed, except where the employer can establish that:

(a) The equipment must be running to be properly serviced or maintained;

(b) The equipment cannot be serviced or maintained while a guard or guards are in place; and

(c) The servicing or maintenance is safely performed.

(12) Shields, guards and access doors that will prevent accidental contact with rotating machine parts on constant-running drives shall be in place when the machine is running. This requirement shall not apply to combines where such guards could create fire hazards.

(13) A guard or shield on stationary equipment shall be provided at the mesh point or pinch point where the chain or belt contacts the sprocket or pulley. Revolving shafts shall be guarded by a standard safeguard unless guarded by location. Shafts that protrude less than one-half the outside diameter of the shaft are exempt from this section.

(14) Projections, such as exposed bolts, keys, or set screws on sprockets, sheaves or pulleys on stationary equipment shall be shielded unless guarded by location.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-165, filed 3/5/93, effective 6/1/93; 91-24-017 (Order 91-07), § 296-306-165, filed 11/22/91, effective 12/24/91; 89-11-035 (Order 89-03), § 296-306-165, filed 5/15/89, effective 6/30/89; Order 76-28, § 296-306-165, filed 9/28/76; Order 75-2, § 296-306-165, filed 1/24/75.]

**WAC 296-306-200 Rollover protective structures (ROPS) for tractors used in agricultural operations.** (1) Scope. Agricultural tractors manufactured after October 25, 1976, shall meet the requirements in this section.

Note: The promulgation of specific standards for rollover protective structures for rubber-tired skid-steer equipment is reserved pending promulgation of specific standards to cover such equipment. ROPS requirements contained in this section do not apply to rubber-tired skid-steer equipment used in agricultural operations.

(2) Rollover protective structure. A rollover protective structure (ROPS) shall be provided by the employer for each tractor operated by an employee. Except as provided in subsection (6) of this section, ROPS used on wheel-type tractors shall meet the test and performance requirements of WAC 296-306-250 through 296-306-25023 and ROPS used on track-type tractors shall meet the test and performance

requirements of WAC 296-306-260 through 296-306-270. (See ROPS Design and Testing Criteria Addendum.)

(3) Seatbelts.

(a) Where ROPS are required by this section, the employer shall:

(i) Provide each tractor with a seatbelt which meets the requirements of this subsection;

(ii) Require that each employee uses such seatbelt while the tractor is moving; and

(iii) Require that each employee tightens the seatbelt sufficiently to confine the employee to the protected area provided by the ROPS.

(b) Each seatbelt shall meet the requirements set forth in ANSI/SAE J800 April 1986 Motor Vehicle Seat Belt Assemblies,* except as noted hereafter:

(i) Where a suspended seat is used, the seatbelt shall be fastened to the movable portion of the seat to accommodate a ride motion of the operator.

(ii) The seatbelt anchorage shall be capable of withstanding tensile loading as required by WAC 296-306-275 (1) and (2).

(iii) The seatbelt webbing material shall have a resistance to acids, alkalis, mildew, aging, moisture and sunlight equal to or better than that of untreated polyester fiber.

(4) Protection from spillage. Batteries, fuel tanks, oil reservoirs and coolant systems shall be constructed and located or sealed to assure that spillage will not occur which may come in contact with the operator in the event of an upset.

(5) Protection from sharp surfaces. All sharp edges and corners at the operator's station shall be designed to minimize operator injury in the event of an upset.

(6) Exempted uses. Subsections (2) and (3) of this section do not apply to the following uses:

(a) "Low profile" tractors while they are used in orchards, vineyards or hop yards where the vertical clearance requirements would substantially interfere with normal operations, and while their use is incidental to the work performed therein.

(b) "Low profile" tractors while used inside a farm building or greenhouse in which the vertical clearance is insufficient to allow a ROPS equipped tractor to operate, and while their use is incidental to the work performed therein.

(c) Tractors while used with mounted equipment which is incompatible with ROPS (e.g., cornpickers, cotton strippers, vegetable pickers and fruit harvesters.)

(d) Track-type agricultural tractors whose overall width (as measured between the outside edges of the tracks) is at least three times the height of their rated center of gravity, and whose rated maximum speed in either forward or reverse is not greater than seven miles per hour, when used only for tillage or harvesting operations and while their use is incidental thereto, and which:

(i) Does not involve operating on slopes in excess of forty percent from horizontal; and

(ii) Does not involve operating on piled crop products or residue, as for example, silage in stacks or pits, and

(iii) Does not involve operating in close proximity to irrigation ditches, streams or other excavations more than two feet deep which contain slopes of more than forty percent from horizontal; and

(iv) Does not involve construction-type operation, such as bulldozing, grading or land clearing.

(7) Remounting. Where ROPS are removed for any reason, they shall be remounted so as to meet the requirements of this subsection.

(8) Labeling. Each ROPS shall have a label, permanently affixed to the structure, which states:

(a) Manufacturer's or fabricator's name and address;

(b) ROPS model number, if any;

(c) Tractor makes, models, or series numbers that the structure is designed to fit; and

(d) That the ROPS model was tested in accordance with the requirements of this section.

(9) Operating instructions. Every employee who operates an agricultural tractor shall be informed of the operating practices contained in Exhibit A of this section and of any other practices dictated by the work environment. Such information shall be provided at the time of initial assignment and at least annually thereafter.

* Copies may be obtained from the American National Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

EXHIBIT A

EMPLOYEE OPERATING INSTRUCTIONS

1. Securely fasten your seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments and holes.
3. Reduce speed when turning, crossing slopes and on rough, slick or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going, especially at row ends, on roads and around trees.
6. Passengers, other than persons required for instruction or machine operation, shall not be permitted to ride on equipment unless a passenger seat or other protective device is provided.
7. Operate the tractor smoothly—no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers.
9. When tractor is stopped, set brakes securely and use park lock if available.

(10) Training.

(a) Every employee who operates an agriculture tractor shall be trained specifically in the operation of the tractor to be used. Such training shall include an orientation of the operator to the topographical features of the land where the tractor will be operated. Training shall emphasize safe operating practices to avoid roll-over.

(b) The tractor training program shall be described in the written accident prevention programs required by WAC 296-306-035(7).

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-200, filed 3/5/93, effective 6/1/93; 89-11-035 (Order 89-03), § 296-306-200, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-306-200, filed 7/13/83, effective 9/12/83; 82-08-026 (Order 82-10), § 296-306-200, filed 3/30/82; Order 76-28, § 296-306-200, filed 9/28/76.]

## WAC 296-306-26001 Minimum performance criteria for rollover protective structures for designated

**scrapers, loaders, dozers, graders, and crawler tractors.** (1) Definitions. For purposes of this section, "vehicle weight" means the manufacturer's maximum weight of the prime mover for rubber-tired self-propelled scrapers. For other types of equipment to which this section applies, "vehicle weight" means the manufacturer's maximum recommended weight of the vehicle plus the heaviest attachment.

(2) General.

(a) This section prescribes minimum performance criteria for rollover protective structures (ROPS) for rubber-tired self-propelled scrapers; rubber-tired front-end loaders and rubber-tired dozers; crawler tractors, and crawler-type loaders, and motor graders. The vehicle and ROPS as a system shall have the structural characteristics prescribed in subsection (7) of this section for each type of machine described in this subsection.

(3) The static laboratory test prescribed herein will determine the adequacy of the structures used to protect the operator under the following conditions:

(a) For rubber-tired self-propelled scrapers, rubber-tired front-end loaders, and rubber-tired dozers: Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to a maximum roll angle of 360° down a slope of 30° maximum.

(b) For motor graders: Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to 360° down a slope of 30° maximum.

(c) For crawler tractors and crawler-type loaders: Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to a maximum roll angle of 360° down a slope of 45°.

(4) Facilities and apparatus.

(a) The following material is necessary:

(i) Material, equipment, and tiedown means adequate to ensure that the ROPS and its vehicle frame absorb the applied energy.

(ii) Equipment necessary to measure and apply loads to the ROPS. Adequate means to measure deflection and lengths should also be provided.

(iii) Recommended, but not mandatory, types of test setups are illustrated in Figure C-17 for all types of equipment to which this section applies; and in Figure C-18 for rubber-tired self-propelled scrapers; Figure C-19 for rubber-tired front-end loaders, rubber-tired dozers, and motor graders; and Figure C-20 for crawler tractors and crawler-type loaders.

(b) Table V-1 contains a listing of the required apparatus for all types of equipment described in subsection (2)(a) of this section.

TABLE V-1

| Means to measure | Accuracy |
|---|---|
| Deflection of ROPS, inches . . . . . | ± 5% of deflection measured. |
| Vehicle weight, pounds . . . . . | ± 5% of the weight measured. |
| Force applied to frame, pounds . . | ± 5% of force measured. |
| Dimensions of critical zone, inches. . . . . | ± 0.5 in. |

(5) Vehicle condition. The ROPS to be tested must be attached to the vehicle structure in the same manner as it will be attached during vehicle use. A totally assembled vehicle is not required. However, the vehicle structure and frame which support the ROPS must represent the actual vehicle installation. All normally detachable windows, panels, or nonstructural fittings shall be removed so that they do not contribute to the strength of the ROPS.

(6) Test procedure. The test procedure shall include the following, in the sequence indicated:

(a) Energy absorbing capabilities of ROPS shall be verified when loaded laterally by incrementally applying a distributed load to the longitudinal outside top member of the ROPS, as shown in Figure C-17, C-18 or C-19 as applicable. The distributed load must be applied so as to result in approximately uniform deflection of the ROPS. The load increments should correspond with approximately 0.5 in. ROPS deflection increment in the direction of the load application, measured at the ROPS top edge. Should the operator's seat be offcenter, the load shall be applied on the offcenter side. For each applied load increment, the total load (lb.) versus corresponding deflection (in.) shall be plotted, and the area under the load-deflection curve shall be calculated. This area is equal to the energy (in.-lb.) absorbed by the ROPS. For a typical load-deflection curve and calculation method, see Figure C-21.

Incremental loading shall be continued until the ROPS has absorbed the amount of energy and the minimum applied load specified under subsection (7) of this section has been reached or surpassed.

(b) To cover the possibility of the vehicle coming to rest on its top, the support capability shall be verified by applying a distributed vertical load to the top of the ROPS so as to result in approximately uniform deflection (see Figure C-17). The load magnitude is specified in subsection (6)(b)(iii) of this section.

(c) The low temperature impact strength of the material used in the ROPS shall be verified by suitable material tests or material certification (see subsection (7)(b)(iv) of this section).

(7) Performance requirements.

(a) General performance requirements.

(i) No repairs or straightening of any member shall be carried out between each prescribed test.

(ii) During each test, no part of the ROPS shall enter the critical zone as detailed in SAE J397 (1969). Deformation of the ROPS shall not allow the plane of the ground to enter this zone.

(b) Specific performance requirements.

(i) The energy requirement for purposes of meeting the requirements of subsection (6)(a) of this section is to be determined by referring to the plot of the energy versus weight of vehicle (see Figure C-22 for rubber-tired self-propelled scrapers; Figure C-23 for rubber-tired front-end loaders and rubber-tired dozers; Figure C-24 for crawler tractors and crawler-type loaders; and Figure C-25 for motor graders. For purposes of this section force and weight are measured as pounds (lb.); energy (U) is measured as inch-pounds).

(ii) The applied load must attain at least a value which is determined by multiplying the vehicle weight by the

corresponding factor shown in Figure C-26 for rubber-tired self-propelled scrapers; in Figure C-27 for rubber-tired front-end loaders and rubber-tired dozers; in Figure C-28 for crawler tractors and crawler-type loaders; and in Figure C-29 for motor graders.

(iii) The load magnitude for purposes of compliance with subsection (6)(b) of this section is equal to the vehicle weight. The test of load magnitude shall only be made after the requirements of subdivision (b)(i) of this subsection are met.

(iv) Material used in the ROPS must have the capability of performing at zero degrees Fahrenheit, or exhibit Charpy V notch impact strength of 8 foot-pounds at minus 20° Fahrenheit. This is a standard Charpy specimen as described in American Society of Testing and Materials A 370, Methods and Definitions for Mechanical Testing of Steel Products. The purpose of this requirement is to reduce the tendency of brittle fracture associated with dynamic loading, low temperature operation, and stress raisers which cannot be entirely avoided on welded structures.

(8) Source of standard. This standard is derived from, and restates, the following Society of Automotive Engineers Recommended Practices: SAE J320a, Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired, Self-Propelled Scrapers; SAE J394, Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired Front-End Loaders and Rubber-Tired Dozers; SAE J395, Minimum Performance Criteria for Roll-Over Protective Structure for Crawler Tractors and Crawler-Type Loaders; and SAE J396, Minimum Performance Criteria for Roll-Over Protective Structure for Motor Graders. These recommended practices shall be resorted to in the event that questions of interpretation arise. The recommended practices appear in the 1971 SAE Handbook, which may be examined in each of the district offices of the division of industrial safety and health of the department of labor and industries.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-26001, filed 3/5/93, effective 6/1/93; Order 76-28, § 296-306-26001, filed 9/28/76.]

**Reviser's note:** Exhibit B, Figures V-1 through V-28, is codified as WAC 296-306-27095.

**WAC 296-306-265 Protective frame (ROPS) test procedures and performance requirements for wheel-type agricultural and industrial tractors used in agriculture.** (1) Definitions applicable to this section.

(a) SAE J333a, Operator Protection for Wheel-Type Agricultural and Industrial Tractors (July 1970) defines "agricultural tractor" as a "wheel-type vehicle of more than 20 engine horsepower designed to furnish the power to pull, carry, propel, or drive implements that are designed for agricultural usage." Since this chapter applies only to agriculture work, the following definition of "agricultural tractor" is adopted for purposes of this part: "Agricultural tractor" means a wheel-type vehicle of more than 20 engine horsepower, which is designed to furnish the power to pull, propel, or drive implements.

(b) "Industrial tractor" means that class of wheeled type tractor of more than 20 engine horsepower (other than rubber-tired loaders and dozers described in WAC 296-306-26001), used in operations such as landscaping, construction services, loading, digging, grounds keeping, and highway maintenance.

(c) The following symbols, terms, and explanations apply to this section:

Eis = Energy input to be absorbed during side loading. Eis = 723 + 0.4 W ft.-lb. (E'is = 100 + 0.12 W',m.-kg).

Eir = Energy input to be absorbed during rear loading. Eir = 0.47 W ft. - lb. (E'ir = 0.14 W', m. - kg).

W = Tractor weight as prescribed in WAC 296-306-265 (5)(a) and (5)(c) in lb. (W', kg).

L = Static load, lb. (kg.).

D = Deflection under L, in. (mm.).

L-D = Static load-deflection diagram.

Lm-Dm = Modified static load-deflection diagram (Figure C-30). To account for increase in strength due to increase in strain rate, raise L in plastic range to L x K.

K = Increase in yield strength induced by higher rate of loading (1.3 for hot rolled low carbon steel 1010-1030). Low carbon is preferable; however, if higher carbon or other material is used, K must be determined in the laboratory. Refer to Charles H. Norris, et al., Structural Design for Dynamic Loads (1959), p. 3.

Lmax = Maximum observed static load.

Load Limit = Point on L-D curve where observed static load is 0.8 Lmax (refer to Figure C-5).

Eu = Strain energy absorbed by the frame, ft.-lb. (m. - kg) area under Lm-Dm curve.

FER = Factor of energy ratio, FER = Eu/Eis; also = Eu/Eir.

Pb = Maximum observed force in mounting connection under static load, L, lb. (kg.).

FSB = Design margin for mounting connection FSB = (Pu/Pb)-1.

H = Vertical height of lift of 4,410 lb. (2,000 kg.) weight, in. (H', mm.). The weight shall be pulled back so that the height of its center of gravity above the point of impact is defined as follows: H = 4.92 + 0.00190 W or (H' = 125 = 0.107 W') (Figure C-7).

(d) Source of standard. The standard in this section is derived from, and restates, Society of Automotive Engineers Standard J334a (July 1970), Protective Frame Test Procedures and Performance Requirements. This standard shall be resorted to in the event that questions of interpretation arise. The standard appears in the 1971 SAE handbook.

(2) General.

(a) The purpose of this section is to set forth requirements for frames for the protection of operators of wheel-type agricultural and industrial tractors to minimize the possibility of operator injury resulting from accidental upsets during normal operation. With respect to agricultural and industrial tractors, the provisions of WAC 296-306-260 and 296-306-270 for rubber-tired dozers and rubber-tired loaders may be utilized in lieu of the requirements of this section.

(b) The protective frame which is the subject of this standard is a structure mounted to the tractor that extends

above the operator's seat and conforms generally to Figure C-10.

(c) If an overhead weather shield is attached to the protective frame, it may be in place during tests: *Provided,* That it does not contribute to the strength of the protective frame. If such an overhead weather shield is attached, it must meet the requirements of subsection (10) of this section.

(d) For overhead protection requirements, see WAC 296-306-270.

(e) If protective enclosures are used on wheel-type agricultural and industrial tractors, they shall meet the requirements of Society of Automotive Engineers Standard J168 (July 1970), Protective Enclosures, Test Procedures, and Performance Requirements.

(3) Applicability. The requirements of this section apply to wheel-type agricultural tractors used in agriculture work and to wheel-type industrial tractors used in construction type work. See subsection (1) of this section for definitions of agricultural tractors and industrial tractors.

(4) Performance requirements.

(a) Either a laboratory test or a field test is required in order to determine the performance requirements set forth in subsection (10) of this section.

(b) A laboratory test may be either static or dynamic. The laboratory test must be under conditions of repeatable and controlled loading in order to permit analysis of the protective frame.

(c) A field upset test, if used, shall be conducted under reasonably controlled conditions, both rearward and sideways, to verify the effectiveness of the protective frame under actual dynamic conditions.

(5) Test procedure—General.

(a) The tractor used shall be the tractor with the greatest weight on which the protective frame is to be used.

(b) A new protective frame and mounting connections of the same design shall be used for each test procedure.

(c) Instantaneous and permanent frame deformation shall be measured and recorded for each segment of the test.

(d) Dimensions relative to the seat shall be determined with the seat unloaded and adjusted to its highest and most rearward latched position provided for a seated operator.

(e) If the seat is offset, the frame loading shall be on the side with the least space between the centerline of the seat and the upright.

(f) The low temperature impact strength of the material used in the protective structure shall be verified by suitable material tests or material certifications in accordance with WAC 296-306-26001 (7)(b)(iv).

(6) Test procedure for vehicle overturn.

(a) Vehicle weight. The weight of the tractor, for purposes of this section, includes the protective frame, all fuels, and other components required for normal use of the tractor. Ballast must be added if necessary to achieve a minimum total weight of 130 lb. (59 kg.) per maximum power takeoff horsepower at rated engine speed. The weight of the front end must be at least 33 lb. (15 kg.) per maximum power takeoff horsepower. In case power takeoff horsepower is unavailable, 95 percent of net engine flywheel horsepower shall be used.

(b) Agricultural tractors shall be tested at the weight set forth in subdivision (a) of this subsection.

(c) Industrial tractors shall be tested with items of integral or mounted equipment and ballast that are sold as standard equipment or approved by the vehicle manufacturer for use with the vehicle where the protective frame is expected to provide protection for the operator with such equipment installed. The total vehicle weight and front end weight as tested shall not be less than the weights established in subdivision (a) of this subsection.

(d) The test shall be conducted on a dry, firm soil bank as illustrated in Figure C-2. The soil in the impact area shall have an average cone index in the 0.6 in. (153 mm.) layer not less than 150 according to American Society of Agricultural Engineers Recommendations ASAE R313, Soil Cone Penetrometer. The path of travel of the vehicle shall be 12° ± 2° to the top edge of the bank.

(e) The upper edge of the bank shall be equipped with an 18 in. (457 mm.) high ramp as described in Figure C-2 to assist in tipping the vehicle.

(f) The front and rear wheel tread settings, where adjustable, shall be at the position nearest to halfway between the minimum and maximum settings obtainable on the vehicle. Where only two settings are obtainable, the minimum setting shall be used.

(g) Vehicle overturn test—Sideways and rearward.

(i) The tractor shall be driven under its own power along the specified path of travel at a minimum speed of 10 m.p.h. (16 km./hr.) or maximum vehicle speed if under 10 m.p.h. (16 km./hr.) up the ramp as described in subdivision (e) of this subsection to induce sideways overturn.

(ii) Rear upset shall be induced by engine power with the tractor operating in gear to obtain 3-5 m.p.h. (4.8-8 km./hr.) at maximum governed engine r.p.m. preferably by driving forward directly up a minimum slope of two vertical to one horizontal. The engine clutch may be used to aid in inducing the upset.

(7) Other test procedures. When the field upset test is not used to determine ROPS performance, either the static test or the dynamic test, contained in subsection (8) or (9) of this section, shall be made.

(8) Static test.

(a) Test conditions.

(i) The laboratory mounting base shall include that part of the tractor chassis to which the protective frame is attached including the mounting parts.

(ii) The protective frame shall be instrumented with the necessary equipment to obtain the required load deflection data at the locations and directions specified in Figure C-3, C-4, and C-5.

(iii) The protective frame and mounting connections shall be instrumented with the necessary recording equipment to obtain the required load-deflection data to be used in calculating FSB (see subsection (1)(c) of this section). The gauges shall be placed on mounting connections before the installation load is applied.

(b) Test procedure.

(i) The side load application shall be at the upper extremity of the frame upright at a 90° angle to the centerline of the vehicle. The side load "L" shall be applied

according to Figure C-3. "L" and "D" shall be recorded simultaneously. The test shall be stopped when:

(A) The strain energy absorbed by the frame is equal to the required input energy (Eis) or

(B) Deflection of the frame exceeds the allowable deflection, or

(C) The frame load limit occurs before the allowable deflection is reached in the side load.

(ii) The L-D diagram, as shown by means of a typical example in Figure C-6, shall be constructed, using the data obtained in accordance with item (i) of this subdivision.

(iii) The modified Lm-Dm diagram shall be constructed according to item (ii) of this subdivision and according to Figure C-6. The strain energy absorbed by the frame (Eu) shall than [then] be determined.

(iv) Eis, FER, and FSB shall be calculated.

(v) The test procedure shall be repeated on the same frame utilizing L (rear input; see Figure C-5) and Eir. Rear load application shall be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 sq. in. (1,032 sq. cm.) normal to the direction of load application. The load shall be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright.

(9) Dynamic test.

(a) Test conditions.

(i) The protective frame and tractor shall meet the requirements of subsection (6)(b) or (c) of this section, as appropriate.

(ii) The dynamic loading shall be produced by use of a 4,410 lb. (2,000 kg.) weight acting as a pendulum. The impact face of the weight shall be 27 plus or minus 1 in. by 27 plus or minus 1 in. (686 + or - 25 mm.) and shall be constructed so that its center of gravity is within 1 in. (25.4 mm.) of its geometric center. The weight shall be suspended from a pivot point 18-22 ft. (5.5-6.7 m.) above the point of impact on the frame and shall be conveniently and safely adjustable for height. (See Figure C-6.)

(iii) For each phase of testing, the tractor shall be restrained from moving when the dynamic load is applied. The restraining members shall be of 0.5-0.63 in. (12.5-16 mm.) steel cable and points of attaching restraining members shall be located an appropriate distance behind the rear axle and in front of the front axle to provide a 15°-30° angle between a restraining cable and the horizontal. The restraining member shall either be in the plane in which the center gravity of the pendulum will swing or more than one restraining cable shall give a resultant force in this plane. (See Figure C-8.)

(iv) The wheel tread setting shall comply with the requirements of subsection (6)(f) of this section. The tires shall have no liquid ballast and shall be inflated to the maximum operating pressure recommended by the tire manufacturer. With specified tire inflation, the restraining cables shall be tightened to provide tire deflection of 6-8 percent of nominal tire section width. After the vehicle is properly restrained, a wooden beam 6 x 6 in. (15 x 15 cm.) shall be driven tightly against the appropriate wheels and clamped. For the test to the side, an additional wooden beam shall be placed as a prop against the wheel nearest the operator's station and shall be secured to the floor so that it is held tightly against the wheel rim during impact. The length of this beam shall be chosen so that when it is positioned against the wheel rim it is at an angle of 25°-40° to the horizontal. It shall have a length 20-25 times its depth and a width two to three times its depth. (See Figures C-8 and C-9.)

(v) Means shall be provided indicating the maximum instantaneous deflection along the line of impact. A simple friction device is illustrated in Figure C-9.

(vi) No repair or adjustments may be carried out during the test.

(vii) If any cables, props, or blocking shift or break during the test, the test shall be repeated.

(b) Test procedure.

(i) General. The frame shall be evaluated by imposing dynamic loading to rear followed by a load to the side on the same frame. The pendulum dropped from the height (see definition "H" in subsection (1)(c) of this section) imposes the dynamic load. The position of the pendulum shall be so selected that the initial point of impact on the frame shall be in line with the arc of travel of the center of gravity of the pendulum. A quick release mechanism should be used but, if used, shall not influence the attitude of the block.

(ii) Impact at rear. The tractor shall be properly restrained according to subdivisions (a)(iii) and (iv) of this section. The tractor shall be positioned with respect to the pivot point of the pendulum such that the pendulum is 20° from the vertical prior to impact, as shown in Figure C-8. The impact shall be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright of a new frame.

(iii) Impact at side. The block and restraining shall conform to subdivisions (a)(iii) and (iv) of this subsection. The point of impact shall be that structural member of the protective frame likely to hit the ground first in a sideways accidental upset. The side impact shall be applied to the side opposite that used for rear impact.

(10) Performance requirements.

(a) General.

(i) The frame, overhead weather shield, fenders, or other parts in the operator area may be deformed but shall not shatter or leave sharp edges exposed to the operator, or violate dimensions as shown in Figures C-2 and C-3 as follows:

D = 2 in. (51 mm.) inside of frame upright to vertical centerline of seat.

E = 30 in. (762 mm.).

F = Not less than 0 in. and not more than 12 in. (305 mm.), measured at centerline front of seat backrest to crossbar along the line of load application as shown in Figure C-3.

G = 24 in. (610 mm.).

(ii) The material and design combination used in the protective structure must be such that the structure can meet all prescribed performance tests at zero degrees Fahrenheit in accordance with WAC 296-306-26001 (7)(b)(iv).

(b) Vehicle overturn performance requirements. The requirements of this subsection (10) must be met in both side and rear overturns.

(c) Static test performance requirements. Design factors shall be incorporated in each design to withstand an overturn test as prescribed in this subsection (10). The structural requirements will be generally met if FER is greater than 1 and FSB is greater than K-1 in both side and rear loadings.

(d) Dynamic test performance requirements. Design factors shall be incorporated in each design to withstand the overturn test prescribed in this subsection (10). The structural requirements will be generally met if the dimensions in this subsection (10) are adhered to in both side and rear loads.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-265, filed 3/5/93, effective 6/1/93; 91-11-070 (Order 91-01), § 296-306-265, filed 5/20/91, effective 6/20/91; Order 76-28, § 296-306-265, filed 9/28/76.]

**Reviser's note:** Exhibit B, Figures V-1 through V-28, is codified as WAC 296-306-27095.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

**WAC 296-306-270 Overhead protection for operators of agricultural and industrial tractors.** (1) General.

(a) Purpose. When overhead protection is provided on wheel-type agricultural and industrial tractors, the overhead protection shall be designed and installed according to the requirements contained in this section. The provisions of WAC 296-306-26001 for rubber-tired dozers and rubber-tired loaders may be used in lieu of the standards contained in this section. The purpose of the standard is to minimize the possibility of operator injury resulting from overhead hazards such as flying and falling objects, and at the same time to minimize the possibility of operator injury from the cover itself in the event of accidental upset.

(b) Applicability. This section applies to wheel-type agricultural tractors used in construction work and to wheel-type industrial tractors used in agriculture work. See WAC 296-306-265 (1) and (3).

(c) All equipment used in site clearing operations shall be equipped with rollover guards meeting the requirements of this chapter. In addition, rider-operated equipment shall be equipped with an overhead and rear canopy guard meeting the following requirements:

(i) The overhead covering on this canopy structure shall be of not less than 1/8-inch steel plate or 1/4-inch woven wire mesh with openings no greater than 1 inch, or equivalent.

(ii) The opening in the rear of the canopy structure shall be covered with not less than 1/4-inch woven wire mesh with openings no greater than 1 inch.

(2) Overhead protection. When overhead protection is installed on wheel-type agricultural or industrial tractors used in agriculture work, it shall meet the requirements of this subsection. The overhead protection may be constructed of a solid material. If grid or mesh is used, the largest permissible opening shall be such that the maximum circle which can be inscribed between the elements of the grid or mesh is 1.5 in. (38 mm.) in diameter. The overhead protection shall not be installed in such a way as to become a hazard in the case of upset.

(3) Test procedures—General.

(a) The requirements of WAC 296-306-265 (5), (6) and (7) shall be met.

(b) Static and dynamic rear load application shall be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 in.$^2$ (1,032 cm.$^2$) normal direction of load application. The load shall be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright.

(c) The static and dynamic side load application shall be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 in.$^2$ (1,032 cm.$^2$) normal to the direction of load application. The direction of load application is the same as in WAC 296-306-265 (8) and (9). To simulate the characteristics of the structure during an upset, the center of load application may be located from a point 24 in. (610 mm.) (K) forward to 12 in. (305 mm.) (K) forward to 12 in. (305 mm.) (L) rearward of the front of the seat backrest to best utilize the structural strength. See Figure C-31.

(4) Drop test procedures.

(a) The same frame shall be subjected to the drop test following either the static or dynamic test.

(b) A solid steel sphere or material of equivalent spherical dimension weighing 100 lb. (45.4 kg.) shall be dropped once from a height 10 ft. (3,048 mm.) above the overhead cover.

(c) The point of impact shall be on the overhead cover at a point within the zone of protection as shown in Figure C-32, which is furthest removed from major structural members.

(5) Crush test procedures.

(a) The same frame shall be subjected to the crush test following the drop test and static or dynamic test.

(b) The test load shall be applied as shown in Figure C-33 with the seat positioned as specified in WAC 296-306-265 (5)(d). Loading cylinders shall be pivotally mounted at both ends. Loads applied by each cylinder shall be equal within 2 percent, and the sum of the loads of the two cylinders shall be two times the tractor weight as set forth in WAC 296-306-265 (6)(a). The maximum width of the beam illustrated in Figure C-33 shall be 6 in. (152 mm.).

(6) Performance requirements.

(a) General. The performance requirements set forth in WAC 296-306-265 (10)(b), (c) and (d) shall be met.

(b) Drop test performance requirements.

(i) Instantaneous deformation due to impact of the sphere shall not enter the protected zone as illustrated in Figures C-31, C-32, and C-34.

(ii) In addition to the dimensions set forth in WAC 296-306-265 (10)(a)(i) the following dimensions apply to Figure C-34:

H = 17.5 in. (444 mm.).
J = 2 in. (50.8 mm.) measured from the outer periphery of the steering wheel.

(c) Crush test performance requirements. The protected zone as described in Figure C-34 must not be violated.

(7) Source of standard. This standard is derived from, and restates, the portions of Society of Automotive Engineers Standard J167 which pertain to overhead protection requirements. The full title of the SAE standard is: Protective Frame with Overhead Protection—Test Procedures and Performance Requirements. The SAE standard shall be

resorted to in the event that questions of interpretation arise. The SAE standard appears in the 1971 SAE Handbook.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-270, filed 3/5/93, effective 6/1/93; Order 76-28, § 296-306-270, filed 9/28/76.]

**Reviser's note:** Exhibit B, Figures V-1 through V-28, is codified as WAC 296-306-27095.

## WAC 296-306-27095 Exhibit B—Figures C-17 through C-34.

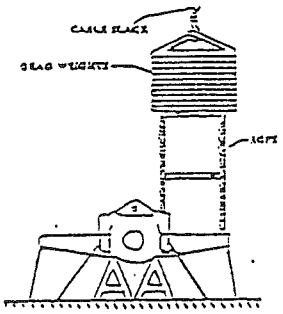


Figure C-17
Vertical loading setup for all types of equipment described in WAC 296-306-26001(2).

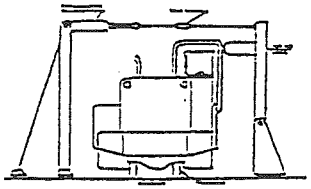


Figure C-18
Test setup for rubber-tired self-propelled scrapers.

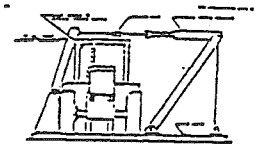


Figure C-19
Test setup for rubber-tired front-end loaders, rubber-tired dozers, and motor graders.

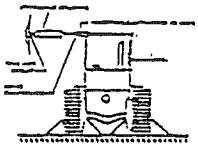


Figure C-20
Side-loading setup for crawler tractors and crawler loaders.

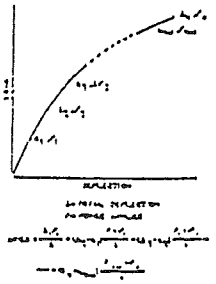


Figure C-21
Determination of energy area under force deflection curve for all types of ROPS equipment defined in WAC 296-306-26001(2).

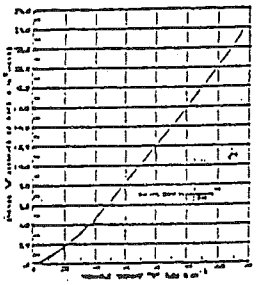


Figure C-22
Energy absorbed versus vehicle weight.

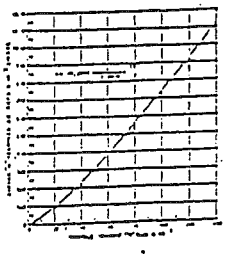


Figure C-23
Energy absorbed versus vehicle weight.

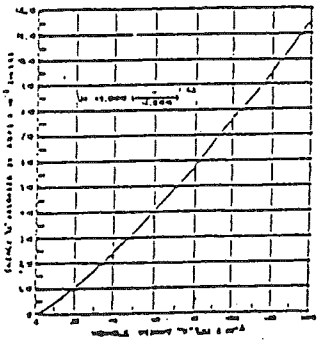


Figure C-24
Energy absorbed versus vehicle weight.

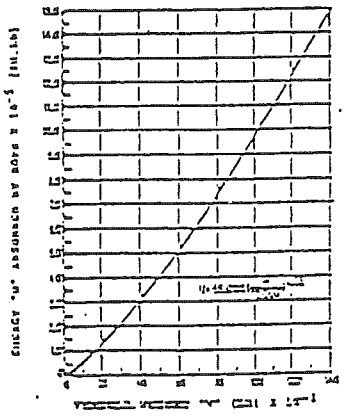


Figure C-25
Energy absorbed versus vehicle weight.

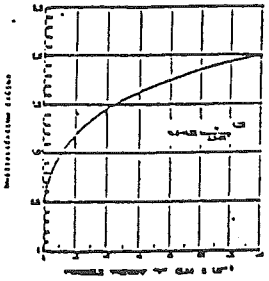


Figure C-26
Minimum horizontal load factor for self-propelled scrapers.

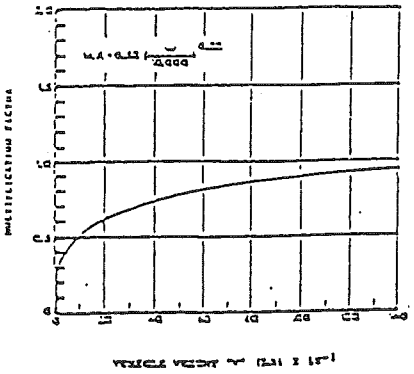


Figure C-27
Minimum horizontal load factor for rubber-tired loaders and dozers.

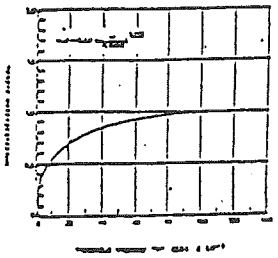


Figure C-28
Minimum horizontal load factor for crawler tractors and crawler-type loaders.

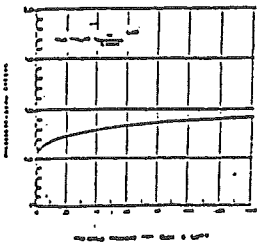


Figure C-29
Minimum horizontal load factor for motor graders.

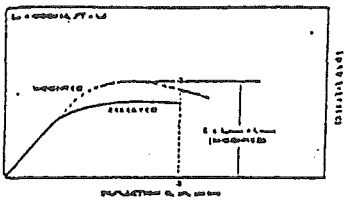


Figure C-30
Typical modified $L_m$-$D_m$ diagram.

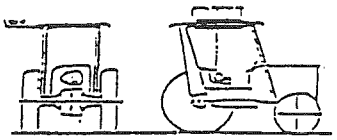


Figure C-31
Location for side load.

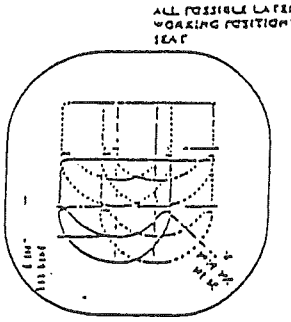


Figure C-32
Zone of protection for drop test.

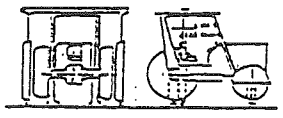


Figure C-33
Method of load application for crush test.

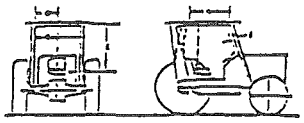


Figure C-34
Protected zone during crush and drop tests.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-27095, filed 3/5/93, effective 6/1/93; 91-11-070 (Order 91-01), § 296-306-27095, filed 5/20/91, effective 6/20/91; 87-24-051 (Order 87-24), § 296-306-27095, filed 11/30/87; Order 76-28, Exhibit B (codified as WAC 296-306-27095), filed 9/28/76.]

**WAC 296-306-330 Decontamination.** (1) Requirement. During any pesticide handling activity, the employer shall provide for employees in accordance with this section, a decontamination site for washing off pesticides and pesticide residues.

(2) General conditions.

(a) The employer shall provide employees with enough water for routine washing, for emergency eyeflushing, and for washing the entire body in case of an emergency. At least 10 gallons of water for one employee and 20 gallons of water for two or more employees shall be provided at mixing and loading sites that do not have running water. At all times when the water is available to employees, the employer shall assure that it is of a quality and temperature that will not cause illness or injury when it contacts the skin or eyes or if it is swallowed.

(b) When water stored in a tank is to be used for mixing pesticides, it shall not be used for decontamination or eye flushing, unless the tank is equipped with properly functioning valves or other mechanisms that prevent movement of pesticides into the tank.

(c) The employer shall provide soap and single-use towels at each decontamination site in quantities sufficient to meet handlers' needs.

(d) The employer shall provide one clean change of clothing, such as overalls, at each decontamination site for use in an emergency.

(3) Location. The decontamination site shall be reasonably accessible to and not more than 1/4 mile from each handler during the handling activity.

(a) Exception for mixing sites. For mixing activities, the decontamination site shall be at the mixing site.

(b) Exception for pilots. The decontamination site for a pilot who is applying pesticides aerially shall be in the airplane or at the aircraft's loading site.

(c) Exception for handling pesticides in remote areas. When handling activities are performed more than 1/4 mile from the nearest place of vehicular access:

(i) The soap, single-use towels, clean change of clothing, and water may be at the nearest place of vehicular access.

(ii) The employer may permit employees to use clean water from springs, streams, lakes, or other sources for decontamination at the remote work site, if such water is more accessible than the water at the decontamination site located at the nearest place of vehicular access.

(d) Decontamination site in treated areas. The decontamination site shall not be in an area being treated with pesticides or in an area under a restricted-entry interval, unless:

(i) The decontamination site is in the area where the employee is performing handling activities;

(ii) The soap, single-use towels, and clean change of clothing are in enclosed containers; and

(iii) The water is running tap water or is enclosed in a container.

(iv) A plumbed or portable emergency eyewash capable of delivering at least 1.5 liters (0.4 gals.) of water per minute for 15 minutes shall be provided at all pesticide mixing and loading stations or decontamination sites.

(4) Emergency eyeflushing. To provide for emergency eyeflushing, the employer shall assure that at least 1 pint of water is immediately available to each employee who is performing tasks for which the pesticide labeling requires protective eyewear. The eyeflush water shall be carried by the employee, or shall be on the vehicle or aircraft the employee is using, or shall be otherwise immediately accessible.

(5) Decontamination after handling activities. At the end of any exposure period, the employer shall provide at the site where employees remove personal protective equipment, soap, clean towels, and a sufficient amount of water so that the employees may wash thoroughly.

(6) All employees shall have access to the emergency washing facilities in pesticide-related emergency situations.

(7) All emergency washing facilities using nonpotable water shall have signs stating water is nonpotable.

(8) Hygiene training and information. Employees handling pesticides or working in fields or areas treated with pesticides in the current growing season shall receive the following instructions on the first day of employment;

(a) Wash hands and face before eating, drinking, or smoking while handling pesticides or working in the pesticide-treated area.

(b) Take a shower immediately after work each day and change into clean clothes.

(c) Wash work clothing daily in soap and hot water and wash separately from other clothing.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-330, filed 3/5/93, effective 6/1/93.]

**WAC 296-306-400 Posting requirements.** (1) When a pesticide having a reentry interval greater than twenty-four hours is applied to a labor-intensive agricultural crop, the pesticide-treated area shall be posted with warning signs in accordance with the requirements of this section. Sign design may be either the state design as illustrated by figure 1 or the officially adopted sign of the Environmental Protection Agency. (Reference federal regulation 40 CFR 170.120.)

(2) Definitions for the purposes of this section are:

(a) "Labor-intensive agricultural crop" means crops requiring substantial hand-labor for planting, thinning, cultivating, pruning, harvesting, or other agricultural activities. Labor-intensive agricultural crops include but are not limited to apples, cherries, peaches, berries, hops, grapes, asparagus, pears, plums, nectarines, onions, cucumbers,

cauliflower, and squash. By virtue of mechanization, crops such as, but not limited to, wheat, oat, and barley are excluded unless substantial hand-labor is utilized.

(b) "Reentry interval" means the length of time after an application until personnel will be allowed to reenter a treated area for work purposes without personal protective equipment.

(3) Pesticide warning signs required under this section shall be posted in such a manner as to be clearly visible from all usual points of entry to the pesticide-treated area. If there are no usual points of entry or the area is adjacent to an unfenced public right of way, signs shall be posted:

(a) At each corner of the pesticide-treated area; and

(b) At intervals not exceeding six hundred feet; and/or

(c) At other locations approved by the department that provide maximum visibility.

(4) The signs shall be posted within twenty-four hours before scheduled application of the pesticide, and remain posted during application and throughout the applicable reentry interval. Signs shall be removed within two days after the expiration of the applicable reentry interval and before employee reentry is permitted. Employees working in an area scheduled for a pesticide application shall be informed of the application and shall vacate the area to be sprayed prior to the application of the pesticide.

(5) Signs shall be legible for the duration of use and wording shall be in English and Spanish.

(6) Signs shall meet the following criteria: (Unless EPA signs are used).

(a) The background color shall be white.

(b) The border at least one-half inch in width shall be red.

(c) The words "DANGER" and "PELIGRO" shall be at the top. Letters for these words shall be black and at least two and one-half inches in height.

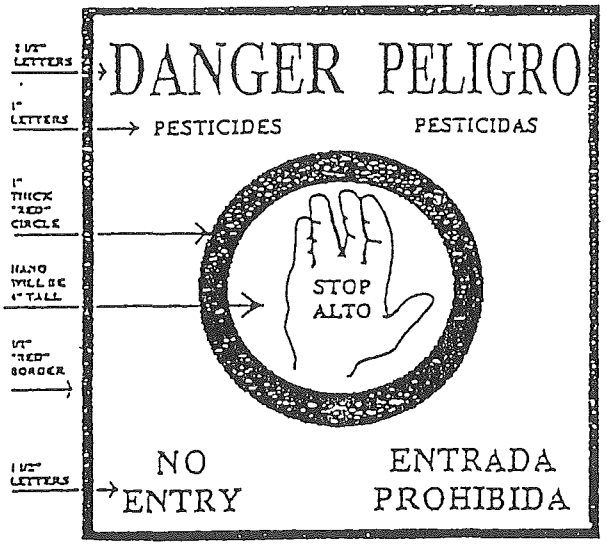
(d) The words "pesticides" and "pesticidas" shall be at the top but below the words "DANGER" and "PELIGRO," respectively. Letters for these words shall be black and at least one inch in height.

(e) The center of the sign shall contain a circle comprised of a one-inch thick red line and contain an upraised hand in black with the white words "STOP" and "ALTO," respectively shown on the palm in the center of the circle. The hand shall be at least six inches in length.

(f) The words "NO ENTRY" and "ENTRADA PROHIBIDA" shall be at the bottom. Letters for these words shall be black and at least one and one-half inches in height.

(g) Sizes of letters and symbols listed are minimum acceptable size posters. Larger posters may be used provided the proportionate size of letters and symbols are maintained.

(7) A small black and white facsimile of the warning sign meeting these requirements is shown in Figure 1.




[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-400, filed 3/5/93, effective 6/1/93; 91-24-017 (Order 91-07), § 296-306-400, filed 11/22/91, effective 12/24/91. Statutory Authority: Chapters 49.17 and 49.70 RCW. 90-11-023 (Order 89-19), § 296-306-400, filed 5/9/90, effective 7/1/90.]

**WAC 296-306-40003 General requirements.** (1) An employer who applies pesticides in connection with the production of an agricultural crop, or causes pesticides to be applied in connection with such production, shall keep records for each application.

The records shall include at least the following information:

(a) The address or exact location of the land where the pesticide was applied or the site where the pesticide was stored; (Note: If application is made to one acre or more, the field/land location must be shown on the map on the required form for at least the first application);

(b) The year, month, day, and time the pesticide was applied or stored;

(c) The product name used on the registered label and the United States Environmental Protection Agency registration number, if applicable, of the pesticide that was applied or stored;

(d) The crop or site to which the pesticide was applied; (application crop or site);

(e) The amount of pesticide applied per acre, or other appropriate measure;

(f) The concentration of pesticide that was applied;

(g) The number of acres, or other appropriate measure, to which pesticide was applied; (total area treated);

(h) If applicable, the licensed applicator's name, address, and telephone number and the name of the individual or individuals making the application;

(i) The direction and estimated velocity of the wind at the time the pesticide was applied: *Provided,* That this subsection (i) shall not apply to applications of baits in bait stations and pesticide applications within structures;

(j) Any other reasonable information required by the director;

(k) A commercial pesticide applicator who applies a pesticide to an agriculture crop or agricultural land shall provide a copy of the pesticide application records required by WAC 296-306-40003(1), to the owner, or to the lessee if applied on behalf of the lessee, of the lands to which the pesticide is applied. Pesticide application records provided by a commercial pesticide applicator to the owner or lessee of agriculture lands under this section need not be provided on a form adopted by the department.

(2) The records shall be updated on the same day that a pesticide is applied. If the employer has been provided a copy of a pesticide application record under subsection (1) of this section, the copy may be used as the record of the pesticide application under this section. The employer shall maintain and preserve the pesticide application records no less than seven years from the date of the application of the pesticide to which the records refer.

(3) The pesticide application records shall be readily accessible to the employer's employees and their designated representatives in a central location in the work place beginning on the day the application is made and for at least thirty days following the application. The employee or representative shall be entitled to view the pesticide application records and make his or her own record from the information contained in the application records.

(4) New or newly assigned employees shall be made aware of the accessibility of the application records before working with pesticides or in a work area containing pesticides.

(5) An employer subject to this section, who stores pesticides, shall, at least once in each calendar year, perform an inventory of the pesticides stored in any work area.

(6) The pesticide inventory records shall include the following information:

(a) The location of the site where the pesticide is stored;

(b) The year, month, day, and time the pesticide was first stored;

(c) The product name used on the registered label and the United States Environmental Protection Agency Registration Number, if applicable, of the pesticide that is stored; and

(d) The amount of pesticide in storage at the time of the inventory.

(7) The inventory records shall be maintained and preserved for no less than seven years.

(8) In addition to performing the annual pesticide inventory required under this section, an employer shall maintain a record of pesticide purchases made between the annual inventory dates.

(a) In lieu of this purchase record, an employer may obtain from distributors from who pesticides are purchased, a statement obligating the distributor to maintain the purchase records on behalf of the employer and in satisfaction of the employer's obligation under this section.

(b) The director may require the submission of all purchase records from employers or distributors, covering the purchases during a specified period of time or in a specified geographical area.

(9) When activities for which the records are maintained cease, the records shall be filed with the department. If an employer subject to this section is succeeded or replaced in that function by another person, the person who succeeds or replaces the employer shall retain the records as required by this section but is not liable for violations committed by the former employer under chapter 49.70 RCW or rules adopted under chapter 49.70 RCW, including violations relating to the retention and preservation of records.

(10) The records required under this section shall be readily accessible to the department for inspection. Copies of the records shall be provided on request, to:

(a) An employee or the employee's designated representative in the case of an industrial insurance claim filed under Title 51 RCW with the department of labor and industries;

(b) Treating health care personnel;

(c) The pesticide incident reporting and tracking review panel; or

(d) Department representative.

(11) The designated representative or treating health care personnel are not required to identify the employee represented or treated.

(12) The department shall keep the name of any affected employee confidential in accordance with RCW 49.17.-080(1).

(13) When a request for records is made under this subsection by treating health care personnel and the record is required for determining treatment, copies of the record shall be provided immediately. Information for treating health care personnel shall be made immediately available by telephone, if requested, with a copy of the records provided within twenty-four hours. For all other requests, copies of the records shall be provided within seventy-two hours.

(14) Copies of records provided to any person or entity under this subsection shall, if so requested, be provided or made available on a form provided by the department.

(15) If an employer has reason to suspect that an employee is ill or injured because of an exposure to one or more pesticides, the employer shall immediately provide the employee a copy of the relevant pesticide application records.

(16) If a request for a copy of a record is made under this section and the employer refuses to provide a copy, the requester may notify the department of the request and the employer's refusal.

(a) Within seven working days, the department shall request that the employer provide the department with all pertinent copies of the records, except that in a medical emergency the request shall be made within two working days.

(b) The employer shall provide copies of the records to the department within twenty-four hours after the department's request.

(17) The department shall include inspection of the records required under this section as part of any on-site inspection of a work place conducted under this chapter or chapter 49.17 RCW. The inspection shall determine whether the records are readily transferable to a form adopted by the department, and readily accessible to employees. However, no employer subject to department inspection may be inspected more than once in any calendar year, unless a previous inspection has found recordkeeping violations. If recordkeeping violations are found, the department may conduct reasonable multiple inspections, pursuant to rules adopted by the department (see WAC 296-27-16018, Compliance inspections, and WAC 296-27-16026, Pro-

grammed inspections). Nothing in this subsection limits the department's inspection of records pertaining to pesticide-related injuries, illnesses, fatalities, accidents, or complaints.

(18) If the employer has failed to maintain and preserve the records, or provide access to or copies of the records required under this section, the employer shall be subject to penalties authorized under RCW 49.17.180.

(19) The department of labor and industries and the department of agriculture shall jointly adopt by rule, forms that satisfy the information requirements of this section and RCW 17.21.100. (See WAC 296-306-40005, pesticide recordkeeping forms.)

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-40003, filed 3/5/93, effective 6/1/93. Statutory Authority: Chapters 49.17 and 49.70 RCW. 90-11-023 (Order 89-19), § 296-306-40003, filed 5/9/90, effective 7/1/90.]

**WAC 296-306-40007 Emergency medical care information.** (1) The name, address, and telephone number of the nearest emergency medical-care facility shall be posted.

(2) Updating. The agricultural employer shall inform workers promptly of any changes to the information on emergency medical-care facilities.

(3) Location.

(a) The information shall be displayed in a location on the farm or in the nursery or greenhouse where it can be readily seen and read by workers.

(b) The information shall be displayed in a location in or near the forest in a place where it can be readily seen and read by workers and where workers are likely to congregate or pass by, such as a shop or an equipment storage site.

(4) Accessibility. Workers shall be informed of the location of the information and shall be allowed access to it.

(5) Legibility. The information shall remain legible during the time it is posted.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-40007, filed 3/5/93, effective 6/1/93.]

**WAC 296-306-40009 Emergency assistance.** If there is reason to believe that an employee has been poisoned or injured by pesticides used on the agricultural establishment, including, but not limited to, exposures from application splash, spill, drift and pesticide residues, the agricultural employer shall:

(1) Make available to the worker prompt transportation from the place of employment or the handling site to an appropriate emergency medical facility.

(2) Provide, promptly, upon request, the following information to the employee or to treating medical personnel:

(a) Product name, EPA registration number, and active ingredients in any product to which the worker might have been exposed during the previous 30 days.

(b) Antidote, first aid, and other medical information from the product labeling.

(c) Information about the circumstances of application or use of the pesticide on the farm, greenhouse, nursery, or forest, and about the exposure of the worker to the pesticide.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-40009, filed 3/5/93, effective 6/1/93.]

**WAC 296-306-40011 Cholinesterase monitoring for employees mixing, loading, or applying organophosphate pesticides, and/or early reentering of treated areas. Nonmandatory.** (1) The department recommends employers implement a screening program for cholinesterase monitoring for employees handling organophosphate and carbamate pesticides.

(2) Red blood cell and plasma cholinesterase testing of employees who handle toxicity class 1 or 2 carbamate or organophosphate pesticides is an acceptable bioassay method for determining the extent and effects of exposure to these types of pesticides. The schedule of testing should include a preexposure baseline level, followed by periodic monitoring during the period of exposure.

(3) Employers should provide baseline cholinesterase tests for all employees handling carbamate or organophosphate pesticides for 30 hours or more in any 30-day period.

(4) Baseline tests should be provided prior to actual exposure, at the beginning of the growing season, or upon first hire. These baseline tests should be repeated every two years.

(5) Periodic tests should be conducted every 30 days after the initial baseline for the next three months, and every 60 days thereafter until organophosphate or carbamate pesticide exposure ceases.

(6) The employer should not allow a monitored employee to be further exposed to carbamate or organophosphate pesticides if any cholinesterase test in comparison to the baseline is less than 70% of red blood cell baseline levels or 60% of plasma baseline levels. These employees should not be further exposed to organophosphate pesticides until their cholinesterase levels return to 80% or more of their baseline levels.

(7) Plasma or red blood cell cholinesterase level monitoring should be done.

(8) Monitoring programs should include appropriate follow-up and referrals to health care providers as needed, and should include a mechanism for recordkeeping and report tracking.

[Statutory Authority: Chapter 49.17 RCW. 93-07-012 (Order 92-24), § 296-306-40011, filed 3/5/93, effective 6/1/93.]

## Chapter 296-401 WAC
## CERTIFICATION OF COMPETENCY FOR JOURNEYMAN ELECTRICIANS

WAC



**WAC 296-401-075 Electrical linemens exemption.** No journeyman electrician certificate or electrical trainee certificate shall be required of employees of serving electrical utilities or of employees of electrical contractors licensed under RCW 19.28.120 for performing work found in WAC 296-46-935 when:

(1) The employees have graduated from an approved lineman's apprenticeship course approved by the department of labor and industries; or

(2) The employees are presently registered in a department of labor and industries approved lineman's apprenticeship course and are under the direct supervision of a certified journeyman electrician; or an employee having met the requirements of subsection (1) of this section; and

(3) The employees carry on their person, acceptable evidence that the requirements of subsection (1) or (2) of this section have been complied with; and

(4) The training received in the approved apprenticeship course includes training in the applicable articles of the currently adopted edition of the National Electrical Code as determined by the department.

[Statutory Authority: RCW 19.28.600. 93-03-048, § 296-401-075, filed 1/15/93, effective 2/15/93.]

**WAC 296-401-163 Continuing education classes.** (1) Each continuing education class, course, or seminar for renewal of an electrician's certificate of competency must be approved by a subcommittee of the electrical board. The subcommittee will consist of three board members with the chief electrical inspector as an ex-officio member. The action of the subcommittee will be reported and ratified at the next regularly scheduled board meeting. Class, course, or seminar hours completed prior to approval of the class, course, or seminar by the subcommittee will not be accepted.

(2) Each continuing education class, course, or seminar application submitted for subcommittee approval must:

(a) Be submitted on forms furnished by the department.

(b) The forms furnished by the department will require the following:

(i) Name of class, course, or seminar and a general description and course outline of the program, and list of all text and related materials, including hours to be earned and hours of classroom instruction.

(ii) Name and address of program sponsor including a contact person.

(iii) Names of instructors and qualifications.

(iv) Copy of completion certificate or copy of the continuing education form developed by the department which lists:

(A) Attendee's name, address, and Social Security number.

(B) Class number, location, and date of class.

(C) Instructor's name and signature or notarized signature of sponsor.

(c) Consist of not less than four classroom hours of instruction; be open to monitoring by a representative of the department and/or the electrical board at no charge.

(d) Award a certificate or continuing education form, to those completing the class, course, or seminar for submittal to the department accompanying the electrician's renewal application.

(e) In order to be considered for approval, course offerings must be based upon:

(i) Currently adopted edition of the National Electrical Code; and/or

(ii) Currently adopted WAC rules, chapters 296-46 and 296-401 WAC; or

(iii) Materials and methods as they pertain to electrical construction, building management systems, and electrical maintenance.

(3) Application for approval of continuing education classes, courses, or seminars must be received by the department not less than forty-five days prior to the proposed first offering of the class, course, or seminar.

(4) Approval of classes, courses, or seminars will be for a period not to exceed three years and when code related must be resubmitted for approval upon adoption of a new National Electrical Code edition.

(5) All class, course, or seminar approval considered will be reviewed without testimony and will be considered on submitted information only. The applicant will be notified within five days of the review of acceptance or with specific written explanation as to why, the applicant's submittal has been rejected.

(6) Applicants wishing to appeal a decision by the subcommittee must do so not less than forty-five days prior to a regularly scheduled electrical board meeting and must furnish any additional information, for submittal to the electrical board not less than thirty days prior to the electrical board meeting scheduled to hear the appeal.

(7) Acceptable evidence of completion of a continuing education class, course, or seminar shall be a copy of the completion certificate required in subsection (2)(d) of this section. The department will not keep the submitted copies of the completion certificate on file after renewal of an applicant's certificate. The department will not accept, nor be responsible for, the original of any completion certificate issued under this section.

[Statutory Authority: RCW 19.28.065 and 19.28.550. 94-01-005, § 296-401-163, filed 12/1/93, effective 1/1/94.]

**WAC 296-401-165 Issuing and renewing an electrician certificate of competency.** (1) The department shall issue an electrician certificate of competency to journeyman or specialty electricians who meet the qualifications in RCW 19.28.530 and who have successfully passed a certification examination in accordance with RCW 19.28.540.

(2) The electrician certificate of competency shall expire on the dates identified in subsection (4) of this section. All subsequent certificates shall be issued for a three-year period. The department shall prorate the original electrician certification fee according to the number of months or major part of a month in a certificate period.

(3) An individual who successfully passes an examination for a certificate of competency, shall apply for a certificate of competency within thirty days of the date the person is notified about the results of the examination. A person who does not apply for a certificate of competency within thirty days of the date the person is notified about the results of the examination, shall be required to apply for, take and pass the examination again.

(4)(a) The certificate of electricians whose last name begins with the letters A through K will expire on April 30.

(b) The certificate of electricians whose last name begins with the letters L through Z will expire on October 31.

(c) The expiration of the certificate identified in (a) and (b) of this subsection shall be not less than six months nor more than three years from the original date of issuance.

(5)(a) Beginning April 30, 1997, to renew an electrician certificate of competency the holder must, prior to the

expiration date of the certificate, remit the appropriate fee identified in WAC 296-401-175 and provide to the department evidence of the completion of approved continuing education course(s) of at least eight classroom hours duration per year of the prior certification period.

(b) An electrician certificate will be renewed within ninety days after the expiration date without reexamination, if the applicant furnishes to the department evidence of completion of approved continuing education course(s) of at least eight classroom hours duration per year of the prior certification, by payment of double the fee identified in WAC 296-401-175. All applications for renewal received more than ninety days after the expiration date of the certificate will require passage of the examination provided by RCW 19.28.540 for recertification.

(c) An electrician certificate will be renewed but will be placed in an inactive status if the renewal process concerning the remittance of application and proper fees complies with (a) or (b) of this subsection but the applicant has not completed the required hours of continuing education course(s). Persons holding a certificate placed in an inactive status will not be permitted to engage in the electrical construction trade. Certificates placed in an inactive status will be returned to active status upon presentation to the department of evidence that all classroom hours of continuing education that were required for renewal have been completed.

(d) Each application for renewal of a prior certification that covered a period of two years or more must include evidence of attendance at an approved continuing education class, of at least eight classroom hours duration, on the latest National Electrical Code changes.

[Statutory Authority: RCW 19.28.550. 94-01-005, § 296-401-165, filed 12/1/93, effective 1/1/94. Statutory Authority: RCW 19.28.060, 19.28.600 and chapter 19.28 RCW. 86-18-041 (Order 86-23), § 296-401-165, filed 8/29/86. Statutory Authority: RCW 19.28.120 and 19.28.510. 83-23-053 (Order 83-32), § 296-401-165, filed 11/14/83.]

# Title 308 WAC

# LICENSING, DEPARTMENT OF

(Formerly: Motor Vehicles, Dept. of and Licenses, Dept. of)

Chapters



## Chapter 308-13 WAC

## BOARD OF REGISTRATION FOR LANDSCAPE ARCHITECTS

WAC



### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

308-13-022 Reexamination. [Statutory Authority: RCW 18.96.060. 85-04-029 (Order PL 511), § 308-13-022, filed 1/31/85.] Repealed by 93-16-009, filed 7/22/93, effective 8/22/93. Statutory Authority: RCW 18.96.060.

308-13-025 Proctoring. [Statutory Authority: RCW 18.96.060 and 18.96.070. 88-15-041 (Order PM 746), § 308-13-025, filed 7/15/88. Statutory Authority: RCW 18.96.060. 85-04-029 (Order PL 511), § 308-13-025, filed 1/31/85.] Repealed by 93-16-009, filed 7/22/93, effective 8/22/93. Statutory Authority: RCW 18.96.060.

**WAC 308-13-020 Qualifications for admittance to the examination.** Applicants for the examination shall provide documentation verifying a minimum of seven years of any combination of academic and practical training experience approved by the board.

(1) ACADEMIC TRAINING

(a) With a passing grade, 32 semester credit hours or 45 quarter credit hours is considered to be one year. Any fraction, one-half year or greater, will be counted one-half year, and less than one-half year will not be counted.

(b) A degree in landscape architecture or credits from an accredited college will be weighted at one hundred percent with a four year maximum credit for academic training.

(c) Credits in landscape architecture from a college not accredited may be weighted up to seventy-five percent with a three year maximum credit for academic training.

(d) Credits in architecture or civil engineering will be weighted at fifty percent with a two year maximum credit for academic training.

(2) PRACTICAL TRAINING

(a) Practical training experience, work in landscape architecture and related work experience, will be measured in months.

(b) No training prior to graduation from high school will be accepted.

(c) Full time practical work experience must be at least thirty-five hours per week for a minimum of ten consecutive weeks; and part time practical work experience must be at