

# Chapter 246-249 WAC

## RADIOACTIVE WASTE—USE OF THE COMMERCIAL DISPOSAL SITE

### WAC

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**WAC 246-249-001 Purpose and scope.** These rules govern generators and brokers of low-level radioactive waste (LLRW) and generators and brokers of naturally occurring and accelerator produced radioactive material (NARM) seeking to dispose waste at any commercial disposal facility in the state of Washington. For purposes of this chapter, the term "radioactive waste" refers to both low-level radioactive waste and naturally occurring and accelerator produced radioactive material. These rules are in addition to applicable requirements of the United States Nuclear Regulatory Commission (NRC), the United States Department of Transportation (DOT), and other requirements of Title 246 WAC, the requirements of the department of ecology, Title 173 WAC, and conditions of the license issued to the disposal site operator(s).

[Statutory Authority: RCW 70.98.050. WSR 05-21-128, 05-23-113 and 06-01-105, § 246-249-001, filed 10/19/05, 11/18/05 and 12/21/05, effective 8/15/06. Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-001, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-001, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-010, filed 12/11/86.]

**WAC 246-249-010 Definitions, abbreviations, and acronyms.** The definitions, abbreviations, and acronyms in this section and in WAC 246-220-010 apply throughout this chapter unless the context clearly indicates otherwise.

(1)(a) **"Broker"** means a person who performs one or more of the following functions for a radioactive waste generator:

- (i) Arranges for transportation of the radioactive waste;
- (ii) Collects or consolidates shipments of radioactive waste (waste collector);
- (iii) Processes radioactive waste in some manner (waste processor);
- (iv) Packages radioactive waste for disposal (waste packager).

(b) Does not mean a carrier whose sole function is to transport radioactive waste.

(2) **"Chelating agent"** means amine polycarboxylic acids, such as EDTA and DTPA; hydroxy-carboxylic acids;

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and polycarboxylic acids, such as citric acid, carbolic acid, and glucinic acid).

(3) **"Chemical description"** means a description of the principal chemical characteristics of a radioactive waste.

(4) **"Computer-readable medium"** means the regulatory agency's computer can transfer the information from the medium into its memory.

(5) **"Consignee"** means the designated receiver of the shipment of radioactive waste.

(6) **"Decontamination facility"** means a facility operating under a commission or agreement state license whose principal purpose is decontamination of equipment or materials to accomplish recycle, reuse, or other waste management objectives, and, for purposes of this section, is not considered to be a consignee for radioactive waste shipments.

(7) **"Disposal container"** means a container principally used to confine radioactive waste during disposal operations at a land disposal facility (also see "high integrity container"). Note that for some shipments, the disposal container may be the transport package.

(8) **"DOT"** means the United States Department of Transportation.

(9) **"EPA"** means the United States Environmental Protection Agency.

(10) **"EPA identification number"** means the number assigned by the EPA administrator under 40 C.F.R. Part 263.

(11) **"Generator"** means any person including a licensee operating under a commission or agreement state license who:

- (a) Is a waste generator as defined in this part; or
- (b) Is the entity or licensee to whom waste can be attributed within the context of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (e.g., waste generated as a result of decontamination or recycle activities).

(12) **"High integrity container"** means a container commonly designed to meet the structural stability requirements of this chapter, and to meet department of transportation Type A package requirements.

(13) **"Land disposal facility"** means the land, buildings, and equipment which are intended to be used for the disposal of radioactive wastes. For the purposes of this chapter, a land disposal facility does not include a geologic repository.

(14) **"Motor vehicle"** means any vehicle, truck, tractor, semi-trailer, or trailer (or any permitted combination of these), driven by mechanical power and used upon the highways to carry property.

(15) **"Motor common carrier"** means a person holding itself out to the general public to provide motor vehicle transportation for compensation over regular or irregular routes, or both.

(16) **"Motor contract carrier"** means a person other than a common carrier providing motor vehicle transporta-

tion of property for compensation under continuing agreements with one or more persons.

(17) **"Motor private carrier"** means a person, other than a motor carrier, transporting property by motor vehicle when the person is the owner, lessee, or bailee of the property being transported; and the property is being transported for sale, lease, rent, or bailment, or to further a commercial enterprise.

(18) **"Motor carrier"** means a motor common carrier and a motor contract carrier.

(19) **"NARM (naturally occurring and accelerator produced material)"** means any radioactive material of natural or accelerator origin; but does not include by-product, source or special nuclear material. Diffuse NARM is low activity NARM that has less than 2 nCi/g of 226-Ra.

(20) **"NRC Forms 540, 540A, 541, 541A, 542, and 542A"** are official NRC Forms referenced in this section. Licensees need not use originals of these NRC Forms as long as any substitute forms are equivalent to the original documentation in respect to content, clarity, size, and location of information. Upon agreement between the shipper and consignee, NRC Forms 541 (and 541A) and NRC Forms 542 (and 542A) may be completed, transmitted, and stored in electronic media. The electronic media must have the capability for producing legible, accurate, and complete records in the format of the uniform manifest.

(21) **"Nuclear utility"** means any operating or inactive nuclear utility.

(22) **"Package"** means the assembly of components necessary to ensure compliance with the packaging requirements of DOT regulations, together with its radioactive contents, as presented for transport.

(23) **"Physical description"** means the items on NRC Form 541 that describe a radioactive waste.

(24) **"Residual waste"** means radioactive waste resulting from processing or decontamination activities that cannot be easily separated into distinct batches attributable to specific waste generators. This waste is attributable to the processor or decontamination facility, as applicable.

(25) **"Rollover volume"** means the difference, in a calendar year, between the volume of NARM disposed at the disposal site and the site volume limit established under WAC 246-249-080(4).

(26) **"Shipper"** means the licensed entity including, but not limited to, the waste generator, waste collector, or waste processor, who offers radioactive waste for transportation, typically consigning this type of waste to a licensed waste collector, waste processor, or land disposal facility operator.

(27) **"Shipment"** means the total radioactive waste material transported in one motor vehicle.

(28) **"Shipping paper"** means NRC Form 540 and, if required, NRC Form 540A which includes the information required by DOT in 49 C.F.R. Part 172.

(29) **"Transuranic waste"** means material contaminated with elements that have an atomic number greater than 92.

(30) **"Uniform Low-Level Radioactive Waste Manifest or uniform manifest"** means the combination of NRC Forms 540, 541, and, if necessary, 542, and their respective continuation sheets as needed, or equivalent.

(31) **"Waste collector"** means an entity, operating under a commission or agreement state license, whose principal purpose is to collect and consolidate waste generated by others, and to transfer this waste, without processing or repackaging the collected waste, to another licensed waste collector, licensed waste processor, or licensed land disposal facility.

(32) **"Waste description"** means the physical, chemical and radiological description of a radioactive waste as called for on NRC Form 541.

(33) **"Waste generator"** means an entity, operating under a commission or agreement state license, who:

(a) Possesses any material or component that contains radioactivity or is radioactively contaminated for which the licensee foresees no further use; and

(b) Transfers this material or component to a licensed land disposal facility or to a licensed waste collector or processor for handling or treatment prior to disposal.

(c) A licensee performing processing or decontamination services may be a "waste generator" if the transfer of radioactive waste from its facility is defined as "residual waste."

(34) **"Waste processor"** means an entity, operating under a commission or agreement state license, whose principal purpose is to process, repack, or otherwise treat radioactive material or waste generated by others prior to eventual transfer of waste to a licensed low-level radioactive waste land disposal facility.

(35) **"Waste type"** means a waste within a disposal container having a unique physical description (i.e., a specific waste descriptor code or description; or a waste sorbed on or solidified or stabilized in a specifically defined media).

[Statutory Authority: RCW 70.98.085 and 70.98.050. WSR 13-17-036, § 246-249-010, filed 8/12/13, effective 9/12/13. Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 11-03-020, § 246-249-010, filed 1/7/11, effective 2/7/11. Statutory Authority: RCW 70.98.050. WSR 05-21-128, 05-23-113 and 06-01-105, § 246-249-010, filed 10/19/05, 11/18/05 and 12/21/05, effective 8/15/06. Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 98-09-117, § 246-249-010, filed 4/22/98, effective 5/23/98; WSR 91-16-109 (Order 187), § 246-249-010, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-010, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-020, filed 12/11/86.]

**WAC 246-249-020 Site use permit.** (1) Each generator and each broker of radioactive waste shall:

(a) Possess an active valid, and unencumbered site use permit prior to the shipment of such waste to, or the disposal of such waste at any commercial disposal facility in the state of Washington.

(b) Renew the site use permit annually to maintain the permit in active status.

(2) If a generator or broker does not renew the permit:

(a) The department shall place the permit in inactive status; and

(b) The generator or broker shall pay a reinstatement fee in addition to the annual site use permit fee as required in WAC 246-254-165.

(3) Each generator and each broker of radioactive waste shall:

(a) Pay the site use permit fees required in WAC 246-254-165;

(b) Submit a completed application for a site use permit to the department on a form provided by the department;

(c) Ensure that each application is signed by the individual broker or generator or by an individual authorized to sign on behalf of the entity generating or brokering the waste; and

(d) Submit the application for site use permit renewal a minimum of four weeks prior to the expiration date of the permit.

(4) Number of permits required by each generator.

(a) Generators who own multiple facilities may apply for one site use permit provided:

(i) All facilities are within the same state; and

(ii) The generator has identified a single contact person who is responsible for responding to the department on matters pertaining to waste shipments for all of the facilities.

(b) Generators who own multiple facilities shall apply for separate site use permits for each facility when:

(i) The facilities are located in different states; or

(ii) The generator has identified different contact persons for each facility who are responsible for responding to the department on matters pertaining to waste shipments.

(c) When a facility both generates and brokers waste, each generator and broker shall possess separate generator and broker site use permits.

(5) Each broker shall:

(a) Ensure a generator of waste has an active, valid, and unencumbered site use permit prior to shipment of waste for disposal;

(b) Ensure the waste will arrive at the disposal facility prior to the expiration date of the generator's site use permit;

(c) Ensure all radioactive waste contained within a shipment accepted for disposal at any commercial radioactive waste disposal facility in the state of Washington is traceable to the original generators and states, regardless of whether the waste is shipped directly from the point of generation to the disposal facility or shipped through a licensed service facility, such as a facility for recycling, processing, compacting, incinerating, collecting, or brokering waste; and

(d) As consignor, assumes co-responsibility with a generator for all aspects of that generator's waste until it can be documented to the department's satisfaction that the broker's sphere of responsibility was limited.

(6) Any generator or broker shipping waste for disposal at the commercial low-level radioactive waste disposal site that was originally generated in the Rocky Mountain compact region shall attach to the shipping manifest and provide to the disposal site operator a copy of the letter granting approval to export waste from the Rocky Mountain compact region.

(7) Suspension or revocation of permit.

(a) The department may suspend the site use permit of the responsible generator, or broker, or both the generator and broker if one or more packages in a shipment of waste does not meet one or more of the requirements of the license issued to the commercial low-level radioactive waste disposal site operator, Title 246 WAC, NRC regulations, DOT regulations, or the conditions of the disposal site operator's radioactive materials license.

(b) The site use permit of a generator or broker may be suspended or revoked if any other licensed commercial low-level radioactive waste disposal site in the United States has refused to accept waste from that generator or broker.

(c) A suspended site use permit may be reinstated provided:

(i) The generator or broker whose permit has been suspended submits a quality assurance procedure designed to correct previous problem[s] and to achieve and maintain compliance with all applicable requirements; and

(ii) A point-of-origin inspection by the state of Washington of the waste management activities of the generator or broker whose permit has been suspended, indicated compliance with all applicable requirements and regulations.

(8) Additional generator and broker requirements. Permittees shall provide additional information as requested by the department for the safe management of radioactive waste in the state of Washington.

[Statutory Authority: RCW 70.98.085 and 70.98.050. WSR 13-17-036, § 246-249-020, filed 8/12/13, effective 9/12/13. Statutory Authority: Chapter 70.98 RCW. WSR 95-13-094, § 246-249-020, filed 6/21/95, effective 7/22/95. Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-020, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-020, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-030, filed 12/11/86.]

#### **WAC 246-249-030 Waste shipment certification. (1)**

A low-level radioactive waste shipment certification, Form RHF-31, must accompany each shipment of radioactive waste to a licensed low-level radioactive waste burial site. All three sections of the form must be completed. The certification shall be submitted at the disposal site to the department of health or its designee, and must be judged to be properly executed prior to the acceptance of the waste by the site operator. If a broker is involved, the broker's and carrier's sections must bear original signatures. The generator's signature need not be an original signature. If a broker is acting as the processor and/or packager of the waste, the broker may act as the agent of the generator and may sign the certification statement for the generator, provided the name and site use permit number of the original generator are identified. If no broker is involved, the generator shall so signify by entry in the broker's section of the form that no broker was involved, e.g., "no broker," and the generator and carrier's section must bear original signatures.

(2) In the case of brokered shipments from more than a single generator, information on each generator's certification shall include data clearly identifying, without reference to other documentation, each package transferred from that generator to the broker. The data shall be compatible with package identifications on the shipment manifest (RSR) from the broker, and with identification markings on the packages.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-030, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-030, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-040, filed 12/11/86.]

#### **WAC 246-249-040 Classification of radioactive waste for near-surface disposal. (1) Considerations.**

Determination of the classification of waste involves two considerations. First, consideration must be given to the concentration of long-lived radionuclides (and their shorter-lived precursors) whose potential hazard will persist long after such precautions as institutional controls, improved waste

form, and deeper disposal have ceased to be effective. These precautions delay the time when long-lived radionuclides could cause exposures. In addition, the magnitude of the potential dose is limited by the concentration and availability of the radionuclide at the time of exposure. Second, consideration must be given to the concentration of shorter-lived radionuclides for which requirements on institutional controls, waste form, and disposal methods are effective.

**(2) Classes of waste.**

(a) Class A waste is waste that is usually segregated from other waste classes at the disposal site. The physical form and characteristics of Class A waste must meet the minimum requirements set forth in WAC 246-249-050(1). If Class A waste also meets the stability requirements set forth in WAC 246-249-050(2), it is not necessary to segregate the waste for disposal.

(b) Class B waste is waste that must meet more rigorous requirements on waste form to ensure stability after disposal. The physical form and characteristics of Class B waste must meet both the minimum and stability requirements set forth in WAC 246-249-050.

(c) Class C waste is waste that not only must meet more rigorous requirements on waste form to ensure stability but also requires additional measures at the disposal facility to protect against inadvertent intrusion. The physical form and characteristics of Class C waste must meet both the minimum and stability requirements set forth in WAC 246-249-050.

**(3) Classification determined by long-lived radionuclides.** If the waste contains only radionuclides listed in Table 1, classification shall be determined as follows:

(a) If the concentration does not exceed 0.1 times the value in Table 1, the waste is Class A.

(b) If the concentration exceeds 0.1 times the value in Table 1, but does not exceed the value in Table 1, the waste is Class C.

(c) If the concentration exceeds the value in Table 1, the waste is not generally acceptable for near-surface disposal.

(d) For waste containing mixtures of radionuclides listed in Table 1, the total concentration shall be determined by the sum of fractions rule described in subsection (7) of this section.

Table 1

Radionuclide	Concentration Curies/Cubic Meter
C-14	8
C-14 in activated metal	80
Ni-59 in activated metal	220
Nb-94 in activated metal	0.2
Tc-99	3
I-129	0.08
Alpha emitting transuranic radionuclides with half-life greater than five years	100 <sup>1</sup>
Pu-241	3,500 <sup>1</sup>
Cm-242	20,000 <sup>1</sup>
Ra-226	100 <sup>1</sup>

<sup>1</sup> Units are nanocuries per gram, to convert to becquerels (Bq) per gram multiply by 37, to convert from curies to gigabecquerels (GBq) multiply by 37. Specific approval of the department is required for disposal of these radionuclides if their concentration is greater than ten percent of the Table 1 value.

**(4) Classification determined by short-lived radionuclides.** If the waste does not contain any of the radionuclides listed in Table 1, classification shall be determined based on the concentrations shown in Table 2. If the radioactive waste does not contain any radionuclides listed in either Table 1 or 2, it is Class A.

(a) If the concentration does not exceed the value of Column 1, the waste is Class A.

(b) If the concentration exceeds the value in Column 1, but does not exceed the value in Column 2, the waste is Class B.

(c) If the concentration exceeds the value in Column 2, but does not exceed the value in Column 3, the waste is Class C.

(d) If the concentration exceeds the value in Column 3, the waste is not generally acceptable for near-surface disposal.

(e) For wastes containing mixtures of the radionuclides listed in Table 2, the total concentration shall be determined by the sum of fractions rule described in subsection (7) of this section.

Table 2

Radionuclide	Concentration, Curies/ Cubic Meter		
	Column 1	Column 2	Column 3
Total of all radionuclides with less than 5-year half-life	700	(*)	(*)
H-3	40	(*)	(*)
Co-60	700	(*)	(*)
Ni-63	3.5	70	700
Ni-63 in activated metal	35	700	7,000
Sr-90	0.04	150	7,000
Cs-137	1	44	4,600

(\*) There are no limits established for these radionuclides in Class B or C wastes. Practical consideration such as the effects of external radiation and internal heat generation on transportation, handling, and disposal will limit the concentrations for these wastes. These wastes shall be Class B unless the concentrations of other radionuclides in Table 2 determine the waste to be Class C independent of these radionuclides. Specific approval of the department is required prior to packaging of Class B tritium waste.

**(5) Classification determined by both long-lived and short-lived radionuclides.** If the waste contains a mixture of radionuclides, some of which are listed in Table 1, and some of which are listed in Table 2, classification shall be determined as follows:

(a) If the concentration of a radionuclide listed in Table 1 is less than 0.1 times the value listed in Table 1, the class shall be that determined by the concentration of radionuclides listed in Table 2.

(b) If the concentration of a radionuclide listed in Table 1 exceeds 0.1 times the value listed in Table 1, the waste shall be Class C, provided the concentration of radionuclides listed in Table 2 does not exceed the value shown in Column 3 of Table 2.

(6) **Classification of waste with radionuclides other than those listed in Tables 1 and 2.** If the waste does not contain any radionuclides listed in either Table 1 or 2, it is Class A.

(7) **The sum of fractions rule for mixtures of radionuclides.** For determining classification for waste that contains a mixture of radionuclides, it is necessary to determine the sum of fractions by dividing each radionuclide's concentration by the appropriate limit and adding the resulting values. The appropriate limits must all be taken from the same column of the same table. The sum of the fractions for the column must be less than or equal to 1.0 if the waste class is to be determined by that column. Example: A waste contains Sr-90 in a concentration of 50 Ci/m<sup>3</sup> and Cs-137 in a concentration of 22 Ci/m<sup>3</sup>. Since the concentrations both exceed the values in Column 1, Table 2, they must be compared to Column 2 values. For Sr-90 fraction,  $50/150 = 0.33$ ; for Cs-137 fraction,  $22/44 = 0.5$ ; the sum of the fractions = 0.83. Since the sum is less than 1.0, the waste is Class B.

(8) **Determination of concentration in wastes.** The concentration of a radionuclide may be determined by indirect methods such as use of scaling factors which relate to the inferred concentration of one radionuclide to another that is measured, or radionuclide material accountability, if there is reasonable assurance that the indirect methods can be correlated with actual measurement. The concentration of a radionuclide may be averaged over the volume of the waste, or weight of the waste if the units are expressed as nanocuries per gram.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-040, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-040, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-050, filed 12/11/86.]

#### **WAC 246-249-050 Acceptable radioactive waste forms and packaging.** (1) Packaging.

(a) Wastes shall be packaged in conformance with the conditions of the license issued to the site operator to which the waste will be shipped. Where the conditions of the site license are more restrictive than the provisions of these regulations, the site license condition shall govern. As a minimum, radioactive waste must be packaged in such a manner that waste containers received at the facility do not show:

- (i) Significant deformation;
- (ii) Loss or dispersal of contents;
- (iii) An increase in the external radiation levels recorded on the manifest, within instrument tolerances; or
- (iv) Significant containment degradation due to rust or other chemical actions.

(b) Wastes shall not be packaged for disposal in cardboard or fiberboard. Wood boxes are prohibited after February 28, 1987.

(c) A process control program shall be used which validates the following:

(i) Liquid waste shall be packaged in sufficient approved absorbent material to absorb twice the volume of the liquid, solidified using an approved solidification agent, or stabilized using an approved stabilization agent.

(ii) Solid wastes containing liquid shall contain as little free-standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed one percent of the volume.

(d) Waste shall not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.

(e) Waste shall not contain, or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged in accordance with (g) of this subsection.

(f) Pyrophoric materials contained in wastes shall be treated, prepared, and packaged to be nonflammable.

(g) Waste in gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20°C. Total activity shall not exceed 100 curies ( $3.7 \times 10^{12}$  Bqs) per container. Class A gaseous waste shall be contained within United States Department of Transportation specification cylinders. Specific approval of the department is required if the gaseous waste is Class B or C.

(h) Wastes containing hazardous, biological, pathogenic, or infectious material shall be treated to reduce the maximum extent practicable the potential hazard from the nonradiological materials. Wastes subject to regulation under Resource Conservation and Recovery Act (RCRA) are not allowed at the disposal site.

(i) Radioactive consumer products, the use and disposal of which is exempt from licensing control, may be received without regard to concentration limits of WAC 246-249-040 Table 2 provided the entire unit is received and is packaged with sufficient sorbent material so as to preclude breakage and rupture of its contents. This subsection allows the disposal of such consumer products as intact household or industrial smoke detector units containing Americium-241 foils and radium or radioactive materials incorporated into self-luminous devices and electron tubes.

(2) The following requirements are intended to provide stability of the waste. Stability is intended to ensure that the waste does not degrade and affect overall stability of the site through slumping, collapse, or other failure of the disposal unit and thereby lead to water infiltration. Stability is also a factor in limiting exposure to an inadvertent intruder, since it provides a recognizable and nondispersible waste form.

(a) Classes B, C, and A stable waste shall have structural stability. A structurally stable waste form will generally maintain its physical dimensions and its form, under the expected disposal conditions such as weight of overburden and compaction equipment, the presence of moisture, and microbial activity, and internal factors such as radiation effects and chemical changes. Structural stability can be provided by the waste form itself, processing the waste to a stable form, or placing the waste in a disposal container or structure that provides stability after disposal.

(b) Notwithstanding the provisions in subsection (1)(c) and (d) of this section, liquid waste, or waste containing liquid, shall be converted into a form that contains as little free-

standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed one percent of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5 percent of the volume of the waste for waste processed to a stable form.

(c) Void spaces within the radioactive waste and between the waste and its package shall be reduced to the extent practicable. Unless specifically approved by the department, void spaces in Class A stable, Class B, and Class C waste packages shall be less than 15 percent of the total volume of the disposal package, provided the disposal package is not a high integrity container nor contains activated metals that are too large to put into high integrity containers. For Class B and Class C waste packages containing activated metals, voids shall be reduced to the extent practicable, and shall be demonstrated to be structurally stable by any of the methods discussed in (a) of this subsection.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-050, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-050, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-060, filed 12/11/86.]

**WAC 246-249-060 Labeling.** Each package of waste must be clearly labeled to identify whether it is Class A waste, Class B waste, or Class C waste in accordance with WAC 246-249-040. This marking is in addition to any transportation markings or labeling required by the United States Nuclear Regulatory Commission or the United States Department of Transportation and shall consist of lettering one-half inch high or greater in a durable contrasting color with the background surrounding the lettering. The classification marking shall be visible on the same side as the radioactive marking or label and in close proximity (within six inches). Waste packages marked "Radioactive," "Limited Quantity" or "Radioactive LSA" need only one classification marking whereas waste packages labeled White I, Yellow II, or Yellow III shall have classification markings in close proximity (within six inches) to each label.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-060, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-060, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-070, filed 12/11/86.]

**WAC 246-249-070 Variances.** It is inevitable that a small portion of wastes cannot be treated to fully comply with the waste form requirements of this chapter consistent with the ALARA philosophy of chapter 246-220 WAC. A waste disposal site operator may apply to the department for a variance provided:

- (1) The variance requested is not for a continuing process or waste stream;
- (2) An equivalent or greater degree of protection is provided by the proposed alternative; and
- (3) All reasonable methods of complying with the existing requirement have been considered.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-070, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-049 (Order 121), recodified as § 246-249-070, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-080, filed 12/11/86.]

**WAC 246-249-080 Naturally occurring and accelerator produced radioactive material (NARM), excluding source material.** (1) In addition to requirements for a disposal site use permit contained in WAC 246-249-020, single generators of naturally occurring or accelerator produced radioactive material shall obtain the specific approval of the department prior to offering wastes for disposal.

(2) Applications for specific departmental approval must be submitted to the department for volumes greater than one thousand cubic feet of diffuse NARM, and must describe:

(a) The chemical processes which produce or have produced the waste;

(b) The volume of waste to be disposed; and

(c) The radionuclides in the waste.

(3) A request for specific approval may be approved if the department finds the material is:

(a) In conformance with conditions of all licenses and permits issued to the disposal site operator; and

(b) Consistent with protection of the public health, safety and environment.

(4) Diffuse naturally occurring and accelerator produced radioactive material, excluding source material, shall be limited to a total site volume of no more than one hundred thousand cubic feet per calendar year. This annual disposal limit does not apply to:

(a) Accelerator produced radioactive material excluding decommissioning waste; and

(b) Discrete sealed sources. For purposes of this section, sealed sources means any device containing naturally occurring radioactive material or accelerator produced radioactive material to be used as a source of radiation which has been constructed in such a manner as to prevent the escape of any radioactive material.

(5) Rollover provision. For a given calendar year, the site licensee may apply to the department for an increase in the site volume limit not to exceed the cumulative rollover volume from previous years. The licensee must submit an application to the department describing the request and addressing the possible impacts. The department may approve the application if it finds that disposal of rollover volumes in excess of one hundred thousand cubic feet per year is appropriate based on the real or potential impacts to the public health, safety and environment.

(6) Emergency provision. If the annual total site volume limit has been met and an emergency situation occurs, single generators of diffuse NARM may seek emergency approval from the secretary to dispose of waste in excess of volume limitations. The secretary may approve emergency disposal if he or she finds that an emergency exists based upon the circumstances described by the applicant, the real or potential impact on the public health and safety as determined by the department and that approval of such additional disposal is consistent with protecting the public health and safety of the citizens of the state of Washington.

(7) The department shall review this section, every five years, beginning five years from the rule's effective date.

[Statutory Authority: RCW 70.98.050. WSR 05-21-128, 05-23-113 and 06-01-105, § 246-249-080, filed 10/19/05, 11/18/05 and 12/21/05, effective 8/15/06. Statutory Authority: Chapter 70.98 RCW. WSR 95-13-094, § 246-249-080, filed 6/21/95, effective 7/22/95. Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 91-16-109 (Order 187), § 246-249-080, filed 8/7/91, effective 9/7/91. Statutory Authority: RCW 43.70.040. WSR 91-02-

049 (Order 121), recodified as § 246-249-080, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. WSR 87-01-031 (Order 2450), § 402-62-090, filed 12/11/86.]

**WAC 246-249-090 Transfer for disposal and manifests.** The requirements of this section are designed to control transfers of radioactive waste by any waste generator, waste collector, or waste processor licensee who ships radioactive waste either directly, or indirectly through a waste collector or waste processor, to a licensed low-level waste land disposal facility; establish a manifest tracking system; and supplement existing requirements concerning transfers and recordkeeping for those wastes.

(1) Effective March 1, 1998, each shipment of radioactive waste intended for disposal at a licensed land disposal facility in the state of Washington must be accompanied by a uniform low-level radioactive waste shipment manifest.

(2) Any licensee shipping radioactive waste intended for ultimate disposal at a licensed land disposal facility must document the information required on NRC's Uniform Low-Level Radioactive Waste Manifest and transfer this recorded manifest information to the intended consignee in accordance with this section.

(a) Each shipment manifest must include a certification by the waste generator as specified in this section.

(b) Each person involved in the transfer for disposal and disposal of waste, including the waste generator, waste collector, waste processor, and disposal facility operator, shall comply with the requirements specified in this section.

(c) Any licensee shipping by-product material as defined in subsection (2)(c) and (d) of this section intended for ultimate disposal at a land disposal facility licensed under chapter 246-250 WAC must document the information required on NRC's Uniform Low-Level Radioactive Waste Manifest and transfer this recorded manifest information to the intended consignee in accordance with this section.

(d) When recording information on shipment manifests, information must be recorded in the International System of Units (SI) or in SI and units of curie, rad, rem, including multiples and subdivisions.

(3) A waste generator, collector, or processor who transports, or offers for transportation, radioactive waste intended for ultimate disposal at a licensed low-level radioactive waste land disposal facility must prepare a manifest reflecting information requested on applicable NRC Forms 540 (Uniform Low-Level Radioactive Waste Manifest (Shipping Paper)) and 541 (Uniform Low-Level Radioactive Waste Manifest (Container and Waste Description)) and, if necessary, on an applicable NRC Form 542 (Uniform Low-Level Radioactive Waste Manifest (Manifest Index and Regional Compact Tabulation)). NRC Forms 540 and 540A must be completed and must physically accompany the pertinent low-level waste shipment. Upon agreement between shipper and consignee, NRC Forms 541 and 541A and 542 and 542A may be completed, transmitted, and stored in electronic media with the capability for producing legible, accurate, and complete records on the respective forms. Licensees are not required by the department to comply with the manifesting requirements of this section when they ship:

(a) Radioactive waste for processing and expect its return (i.e., for storage under their license) prior to disposal at a licensed land disposal facility;

(b) Radioactive waste that is being returned to the licensee who is the "waste generator" or "generator," as defined in this part; or

(c) Radioactively contaminated material to a "waste processor" that becomes the processor's "residual waste."

For guidance in completing these forms, refer to the instructions that accompany the forms. Copies of manifests required by this section may be legible carbon copies, photocopies, or computer printouts that reproduce the data in the format of the uniform manifest.

This section includes information requirements of the U.S. Department of Transportation, as codified in 49 C.F.R. Part 172. Information on hazardous, medical, or other waste, required to meet Environmental Protection Agency regulations, as codified in 40 C.F.R. Parts 259, 261 or elsewhere, is not addressed in this section, and must be provided on the required EPA forms. However, the required EPA forms must accompany the Uniform Low-Level Radioactive Waste Manifest required by this section.

(4) Information requirements.

(a) General information.

The shipper of the radioactive waste, shall provide the following information on the uniform manifest:

(i) The name, facility address, and telephone number of the licensee shipping the waste;

(ii) An explicit declaration indicating whether the shipper is acting as a waste generator, collector, processor, or a combination of these identifiers for purposes of the manifested shipment; and

(iii) The name, address, and telephone number, or the name and EPA identification number for the carrier transporting the waste.

(b) Shipment information.

The shipper of the radioactive waste shall provide the following information regarding the waste shipment on the uniform manifest:

(i) The date of the waste shipment;

(ii) The total number of packages/disposal containers;

(iii) The total disposal volume and disposal weight in the shipment;

(iv) The total radionuclide activity in the shipment;

(v) The activity of each of the radionuclides H-3, C-14, Tc-99, and I-129 contained in the shipment; and

(vi) The total masses of U-233, U-235, and plutonium in special nuclear material, and the total mass of uranium and thorium in source material.

(c) Disposal container and waste information.

The shipper of the radioactive waste shall provide the following information on the uniform manifest regarding the waste and each disposal container of waste in the shipment:

(i) An alphabetic or numeric identification that uniquely identifies each disposal container in the shipment;

(ii) A physical description of the disposal container, including the manufacturer and model of any high integrity container;

(iii) The volume displaced by the disposal container;

(iv) The gross weight of the disposal container, including the waste;

- (v) For waste consigned to a disposal facility, the maximum radiation level at the surface of each disposal container;
- (vi) A physical and chemical description of the waste;
- (vii) The total weight percentage of chelating agent for any waste containing more than 0.1% chelating agent by weight, plus the identity of the principal chelating agent;
- (viii) The approximate volume of waste within a container;
- (ix) The sorbing, stabilization, or solidification media, if any, and the identity of the solidification or stabilization media vendor and brand name;
- (x) The identities and activities of individual radionuclides contained in each container, the masses of U-233, U-235, and plutonium in special nuclear material, and the masses of uranium and thorium in source material. For discrete waste types (i.e., activated materials, contaminated equipment, mechanical filters, sealed source/devices, and wastes in solidification/stabilization media), the identities and activities of individual radionuclides associated with or contained on these waste types within a disposal container shall be reported;
- (xi) The total radioactivity within each container; and
- (xii) For wastes consigned to a disposal facility, the classification of the waste under this chapter. The shipper must identify the waste if it does not meet the structural stability requirements in this chapter.

(d) Uncontainerized waste information.

The shipper of the radioactive waste shall provide the following information on the uniform manifest regarding a waste shipment delivered without a disposal container:

- (i) The approximate volume and weight of the waste;
- (ii) A physical and chemical description of the waste;
- (iii) If the chelating agent exceeds 0.1% by weight, the total weight percentage of chelating agent plus the identity of the principal chelating agent;
- (iv) For waste consigned to a disposal facility, the classification of the waste under this chapter. The shipper must identify the waste if it does not meet the structural stability requirements in this chapter;
- (v) The identities and activities of individual radionuclides contained in the waste, the masses of U-233, U-235, and plutonium in special nuclear material, and the masses of uranium and thorium in source material; and
- (vi) For wastes consigned to a disposal facility, the maximum radiation levels at the surface of the waste.

(e) Multigenerator disposal container information.

This subsection applies to disposal containers enclosing mixtures of waste originating from different generators. (Note: The origin of the radioactive waste resulting from a processor's activities may be attributable to one or more "generators," including "waste generators." It also applies to mixtures of wastes shipped in an uncontainerized form, for which portions of the mixture within the shipment originate from different generators.)

- (i) For homogeneous mixtures of waste, such as incinerator ash, provide waste description applicable to the mixture and the volume of the waste attributed to each generator.
- (ii) For heterogeneous mixtures of waste, such as the combined products from a large compactor, identify each generator contributing waste to the disposal container, and, for discrete waste types (i.e., activated materials, contaminated

equipment, mechanical filters, sealed source/devices, and wastes in solidification/stabilization media), the identities and activities of individual radionuclides contained on these waste types within the disposal container. For each generator, provide the following:

- (A) The volume of waste within the disposal container;
- (B) A physical and chemical description of the waste, including the stabilization or solidification agent, if any;
- (C) The total weight percentage of chelating agents for any disposal container containing more than 0.1% chelating agent by weight, plus the identity of the principal chelating agent;
- (D) The sorbing, solidification, or stabilization media, if any, and the identity of the stabilization media vendor and brand name, if the media is claimed to meet stability requirements in WAC 246-249-050(2); and
- (E) Radionuclide identities and activities contained in the waste, the masses of U-233, U-235, and plutonium in special nuclear material, and the masses of uranium and thorium in source material if contained in the waste.

(5) Certification.

An authorized representative of the waste generator, processor, or collector shall certify by signing and dating the shipment manifest that the transported materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, the U.S. Nuclear Regulatory Commission, and the department. A collector in signing the certification is certifying that nothing has been done to the collected waste which would invalidate the waste generator's certification.

(6) Control and tracking.

(a) Any licensee who transfers radioactive waste to a land disposal facility or a licensed waste collector shall comply with the requirements in (a)(i) through (ix) of this subsection. Any licensee who transfers waste to a licensed waste processor for waste treatment or repackaging shall comply with the requirements of (a)(iv) through (ix) of this section. A licensee shall:

- (i) Prepare all wastes so that the waste is classified according to WAC 246-249-040 and meets the waste characteristics requirements in WAC 246-249-050;
- (ii) Label each disposal container (or transport package if potential radiation hazards preclude labeling of the individual disposal container) of waste to identify whether it is Class A waste, Class B waste, Class C waste, or greater than Class C waste, in accordance with WAC 246-249-040;
- (iii) Conduct a quality assurance program to assure compliance with WAC 246-249-040 and 246-249-050 (the program must include management evaluation of audits);
- (iv) Prepare the NRC Uniform Low-Level Radioactive Waste Manifest as required by this section;
- (v) Forward a copy or electronically transfer the Uniform Low-Level Radioactive Waste Manifest to the intended consignee so that either receipt of the manifest precedes the waste shipment or the manifest is delivered to the consignee with the waste at the time the waste is transferred to the consignee. Using both methods is also acceptable;
- (vi) Include NRC Form 540 (and NRC Form 540A, if required) with the shipment regardless of the option chosen in (a)(v) of this subsection;



(vii) Receive acknowledgment of the receipt of the shipment in the form of a signed copy of NRC Form 540;

(viii) Retain a copy of, or electronically store the Uniform Low-Level Radioactive Waste Manifest and documentation of acknowledgment of receipt as the record of transfer of licensed material as required by these regulations; and

(ix) For any shipments or any part of a shipment for which acknowledgment of receipt has not been received within the times set forth in this section, conduct an investigation in accordance with (e) of this subsection.

(b) Any waste collector licensee who handles only pre-packaged waste shall:

(i) Acknowledge receipt of the waste from the shipper within one week of receipt by returning a signed copy of NRC Form 540;

(ii) Prepare a new manifest to reflect consolidated shipments that meet the requirements of this section. The waste collector shall ensure that, for each container of waste in the shipment, the manifest identifies the generator of that container of waste;

(iii) Forward a copy or electronically transfer the Uniform Low-Level Radioactive Waste Manifest to the intended consignee so that either receipt of the manifest precedes the waste shipment, or the manifest is delivered to the consignee with the waste at the time the waste is transferred to the consignee. Using both methods is also acceptable;

(iv) Include NRC Form 540 (and NRC Form 540A, if required) with the shipment regardless of the option chosen in (b)(iii) of this subsection;

(v) Receive acknowledgment of the receipt of the shipment in the form of a signed copy of NRC Form 540;

(vi) Retain a copy of or electronically store the Uniform Low-Level Radioactive Waste Manifest and documentation of acknowledgment of receipt as the record of transfer of licensed material as required by these regulations;

(vii) For any shipments or any part of a shipment for which acknowledgment of receipt has not been received within the times set forth in this section, conduct an investigation in accordance with this section; and

(viii) Notify the shipper and the department when any shipment, or part of a shipment, has not arrived within sixty days after receipt of an advance manifest, unless notified by the shipper that the shipment has been canceled.

(c) Any licensed waste processor who treats or repackages waste shall:

(i) Acknowledge receipt of the waste from the shipper within one week of receipt by returning a signed copy of NRC Form 540;

(ii) Prepare a new manifest that meets the requirements of this section. Preparation of the new manifest reflects that the processor is responsible for meeting these requirements. For each container of waste in the shipment, the manifest shall identify the waste generators, the preprocessed waste volume, and the other information as required in subsection (4)(e) of this section;

(iii) Prepare all wastes so that the waste is classified according to WAC 246-249-040 and meets the waste characteristics requirements in WAC 246-249-050;

(iv) Label each package of waste to identify whether it is Class A waste, Class B waste, or Class C waste, in accordance with WAC 246-249-040 and 246-249-060;

(v) Conduct a quality assurance program to assure compliance with WAC 246-249-040 and 246-249-050 (the program shall include management evaluation of audits);

(vi) Forward a copy or electronically transfer the Uniform Low-Level Radioactive Waste Manifest to the intended consignee so that either receipt of the manifest precedes the waste shipment, or the manifest is delivered to the consignee with the waste at the time the waste is transferred to the consignee. Using both methods is also acceptable;

(vii) Include NRC Form 540 (and NRC Form 540A, if required) with the shipment regardless of the option chosen in (c)(vi) of this subsection;

(viii) Receive acknowledgment of the receipt of the shipment in the form of a signed copy of NRC Form 540;

(ix) Retain a copy of or electronically store the Uniform Low-Level Radioactive Waste Manifest and documentation of acknowledgment of receipt as the record of transfer of licensed material as required by these regulations;

(x) For any shipment or any part of a shipment for which acknowledgment of receipt has not been received within the times set forth in this section, conduct an investigation in accordance with (e) of this subsection; and

(xi) Notify the shipper and the department when any shipment, or part of a shipment, has not arrived within sixty days after receipt of an advance manifest, unless notified by the shipper that the shipment has been canceled.

(d) The land disposal facility operator shall:

(i) Acknowledge receipt of the waste within one week of receipt by returning, as a minimum, a signed copy of NRC Form 540 to the shipper. The shipper to be notified is the licensee who last possessed the waste and transferred the waste to the operator. If any discrepancy exists between materials listed on the Uniform Low-Level Radioactive Waste Manifest and materials received, copies or electronic transfer of the affected forms must be returned indicating the discrepancy;

(ii) Maintain copies of all completed manifests and electronically store the information required by WAC 246-250-600(8) until the license is terminated; and

(iii) Notify the shipper and the department when any shipment, or part of a shipment, has not arrived within sixty days after receipt of an advance manifest, unless notified by the shipper that the shipment has been canceled.

(e) If the shipper does not receive acknowledgment from the land disposal facility operator for any shipment or part of a shipment within the times set in this section, the shipper must:

(i) Investigate if the shipper has not received notification or receipt within twenty days after transfer; and

(ii) Trace the shipment or part of shipment and report the investigation to the department. Each licensee who conducts a trace investigation shall file a written report with the department within two weeks of completion of the investigation.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 11-03-020, § 246-249-090, filed 1/7/11, effective 2/7/11. Statutory Authority: RCW 70.98.050. WSR 05-21-128, 05-23-113 and 06-01-105, § 246-249-090, filed 10/19/05, 11/18/05 and 12/21/05, effective 8/15/06. Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 98-09-117, § 246-249-090, filed 4/22/98, effective 5/23/98; WSR 97-02-014, § 246-249-090, filed 12/20/96, effective 1/20/97; WSR 91-16-109 (Order 187), § 246-249-090, filed 8/7/91, effective 9/7/91.]