



STATE OF WASHINGTON  
DEPARTMENT OF HEALTH  
DIVISION OF RADIATION PROTECTION

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September 27, 2001

Frederick C. Combs, Deputy Director  
Office of State and Tribal Programs  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Mr. Combs:

This is a request for review of our final regulations pertaining to "exempt distribution of C-14 urea" and "deliberate misconduct" (RATS ID 1997-7 and 1998-1). You have previously reviewed the proposed rules as documented in your letter of November 9, 2000. Enclosed are the "as published" regulations found in Issue 01-02 of the Washington State Register.

Although your November 9, 2000, letter states that you had "no comments", several changes "suggested" by your staff were incorporated into the rules that were published. These include correcting errors made in previous rule revisions (WAC 246-232-008(2)(a); 246-232-009(7); 246-232-011; and 246-232-013). In addition, our legal counsel requested changes in the wording of the "deliberate misconduct" rule (WAC 246-220-060). You will note that proposed subsections (5) and (6)(b) have been removed from the final rule as unnecessary or beyond the scope of our authority. All changes or locations where deletions occurred are highlighted in the enclosed material.

If you have any questions, please feel free to contact me at (360) 236-3221.

Sincerely,

Terry C. Frazee, Supervisor  
Radioactive Materials Section

Enclosures

01 OCT -3 PM 5:52

DSP

STP-006 Template

RIDS CTR: SP08





**RULE MAKING ORDER**  
(RCW 34.05.360)

**CR-103 (07/10/97)**

Agency: Department of Health

- Permanent Rule
- Emergency Rule
- Expedited Adoption
- Expedited Repeal

(1) Date of Adoption:  
December 26, 2000

(2) Purpose:  
To bring radiation regulations into conformance with the US Nuclear Regulatory Commission rules on enforcement action for deliberate misconduct and to make other corrections and housekeeping changes.

(3) Citation of Rules Affected by this order:  
Repealed:  
Amended: WAC 246-220-060 and WAC 246-235-105  
Suspended:

(4) Statutory authority for adoption: RCW 70.98.050  
Other Authority:

**PERMANENT RULE ONLY (including EXPEDITED ADOPTION)**  
Adopted under notice filed as WSR 00-21-118 on October 18, 2000 (date).  
Describe any changes other than editing from proposed to adopted version:  
None

**EMERGENCY RULE ONLY**  
Under RCW 34.05.350 the agency for good cause finds:  
 (a) That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.  
 (b) That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.  
  
Reasons for this finding:

**EXPEDITED REPEAL ONLY**  
Under Preproposal Statement of Inquiry filed as WSR on (date).

(5.3) Any other findings required by other provisions of law as precondition to adoption of effectiveness of rule?  
 Yes  No If Yes, explain:

(6) Effective date of rule:  
**Permanent Rules**                      **Emergency Rules**  
or Expedited Repeal  
 31 days after filing                       Immediately  
 Other (specify) \*                       Later (specify)  
\*(If less than 31 days after filing, specific finding in 5.3 under RCW 34.05.380(3) is required)

NAME (TYPE OR PRINT)  
Mary C. Selecky

SIGNATURE  
*Mary Selecky for Mary Selecky 12/26/00*  
(Deputy Secretary)

CODE REVISER USE ONLY

CODE REVISER'S OFFICE  
STATE OF WASHINGTON

DEC 29 2000

TIME 1:04 AM/PM PM

WSR 01-02-067

**Note: if any category is left blank, it will be calculated as zero.  
No descriptive text.**

**Count by whole WAC sections only, from the WAC number through the history note.  
A section may be counted in more than one category.**

**The number of sections adopted in order to comply with:**

Federal statute:	New	Amended	Repealed	_
Federal rules or standards:	New	Amended	1 Repealed	_
Recently enacted state statutes:	New	Amended	Repealed	_

\*(current calendar year)

**The number of sections adopted at the request of a nongovernmental entity:**

New	Amended	Repealed	_
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**The number of sections adopted on the agency's own initiative:**

New	Amended	Repealed	_
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**The number of sections adopted in order to clarify, streamline, or reform agency procedures:**

New	Amended	2 Repealed	_
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**The number of sections adopted using:**

Negotiated rule making:	New	Amended	Repealed	_
Pilot rule making:	New	Amended	Repealed	_
Other alternative rule making:	New	Amended	2 Repealed	_

AMENDATORY SECTION (Amending Order 121, filed 12/27/90, effective 1/31/91)

**WAC 246-220-060 Violations.** (1) An injunction or other court order may be obtained prohibiting any violation of any provision of the act or any regulation or order issued thereunder.

(2) Any person who violates any provision of the act or any regulation or order issued thereunder may be guilty of a gross misdemeanor and upon conviction, may be punished by fine or imprisonment or both, as provided by law.

(3) A person who knowingly provides to any licensee, applicant, contractor, or subcontractor, components, equipment, materials, or other goods or services, that relate to a licensee's or applicant's activities subject to these regulations, may be individually subject to department enforcement action for deliberate misconduct.

(a) For the purposes of this subsection, "person" means:

(i) A radioactive materials licensee;

(ii) An applicant for a radioactive materials license;

(iii) An employee of a radioactive materials licensee or applicant; or

(iv) Any contractor (including a supplier or consultant), subcontractor, or employee of a contractor or subcontractor of any radioactive materials licensee or applicant for a radioactive materials license.

(b) Persons who knowingly provide to any licensee, applicant, contractor, or subcontractor, components, equipment, materials, or other goods or services, that relate to a licensee's or applicant's activities subject to these regulations may not:

(i) Engage in deliberate misconduct that causes or would have caused, if not detected, a licensee, or applicant to be in violation of any rule, regulation, or order; or any term, condition, or limitation of any license issued by the department; or

(ii) Deliberately submit to the department, a licensee, an applicant, or a licensee's or applicant's contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the department.

(c) For the purposes of this section, deliberate misconduct by a person means an intentional act or omission that the person knows would cause a licensee or applicant to be in violation of any rule, regulation, or order; or any term, condition, or limitation, of any license issued by the department.

AMENDATORY SECTION (Amending WSR 98-13-037, filed 6/8/98, effective 7/9/98)

**WAC 246-235-105 Manufacture, assembly or distribution of radioactive material exempt from regulation.** (1) *Licensing the introduction of radioactive material into products in exempt concentrations.* In addition to the requirements set forth in WAC 246-235-020, a specific license authorizing the introduction of radioactive material into a product or material owned by or in the possession of the licensee or another to be transferred to persons exempt under WAC 246-232-010 (~~((+2)-(a+))~~) (1) will be issued if:

(a) The applicant submits a description of the product or material into which the radioactive material will be introduced, intended use of the radioactive material and the product or material into which it is introduced, method of introduction, initial concentration of the radioactive material in the product or material, control methods to assure that no more than the specified concentration is introduced into the product or material, estimated time interval between introduction and transfer of the product or material, and estimated concentration of the radioactive material in the product or material at the time of transfer; and

(b) The applicant provides reasonable assurance that the concentrations of radioactive material at the time of transfer will not exceed the concentrations in WAC 246-232-130, Schedule C, that reconstruction of the radioactive material in concentrations exceeding those in WAC 246-232-130, Schedule C, is not likely, that use of lower concentrations is not feasible, and that the product or material is not likely to be incorporated in any food, beverage, cosmetic, drug or other commodity or product designed for ingestion or inhalation by, or application to a human being.

(c) Each person licensed under subsection (1) of this section shall file an annual report with the department which shall identify the type and quantity of each product or material into which radioactive material has been introduced during the reporting period; name and address of the person who owned or possessed the product and material, into which radioactive material has been introduced, at the time of introduction; the type and quantity of radionuclide introduced into each such product or material; and the initial concentrations of the radionuclide in the product or material at time of transfer of the radioactive material by the licensee. If no transfers of radioactive material have been made pursuant to subsection (1) of this section during the reporting period, the report shall so indicate. The report shall cover the year ending June 30, and shall be filed within thirty days thereafter.

(2) Licensing the distribution of certain radioactive material in exempt quantities.\*

\*Note: Authority to transfer possession or control by the manufacturer, processor or producer of any equipment, device, commodity or other product containing source material or byproduct material whose subsequent possession, use, transfer and disposal by all other persons who are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission, Washington, D.C. 20555.

(a) An application for a specific license to distribute naturally occurring and accelerator-produced radioactive material (NARM) to persons exempted from these regulations pursuant to WAC 246-232-010 (2)(b) will be approved if:

(i) The radioactive material is not contained in any food, beverage, cosmetic, drug or other commodity designed for ingestion or inhalation by, or application to, a human being;

(ii) The radioactive material is in the form of processed chemical elements, compounds, or mixtures, tissue samples, bioassay samples, counting standards, plated or encapsulated sources, or similar substances, identified as radioactive and to be used for its radioactive properties, but is not incorporated into any manufactured or assembled commodity, product, or device intended for commercial distribution; and

(iii) The applicant submits copies of prototype labels and brochures and the department approves such labels and brochures.

(b) The license issued under paragraph (2)(a) of this section is subject to the following conditions:

(i) No more than ten exempt quantities shall be sold or transferred in any single transaction. However, an exempt quantity may be composed of fractional parts of one or more of the exempt quantity provided the sum of the fractions shall not exceed unity.

(ii) Each exempt quantity shall be separately and individually packaged. No more than ten such packaged exempt quantities shall be contained in any outer package for transfer to persons exempt pursuant to WAC 246-232-010 (2)(b). The outer package shall be such that the dose rate at the external surface of the package does not exceed 0.5 millirem per hour.

(iii) The immediate container of each quantity or separately packaged fractional quantity of radioactive material shall bear a durable, legible label which:

(A) Identifies the radionuclide and the quantity of radioactivity; and

(B) Bears the words "radioactive material."

(iv) In addition to the labeling information required by item (2)(b)(iii) of this section, the label affixed to the immediate container, or an accompanying brochure, shall:

(A) State that the contents are exempt from licensing state requirements;

(B) Bear the words "Radioactive material--Not for human use--Introduction into foods, beverages, cosmetics, drugs, or medicinals, or into products manufactured for commercial distribution is prohibited--Exempt quantities should not be combined"; and

(C) Set forth appropriate additional radiation safety precautions and instructions relating to the handling, use, storage and disposal of the radioactive material.

(c) Each person licensed under paragraph (2)(a) of this section shall maintain records identifying, by name and address,

each person to whom radioactive material is transferred for use under WAC 246-232-010 (2)(b) or the equivalent regulations of a licensing state, and stating the kinds and quantities of radioactive material transferred. An annual summary report stating the total quantity of each radionuclide transferred under the specific license shall be filed with the department. Each report shall cover the year ending June 30, and shall be filed within thirty days thereafter. If no transfers of radioactive material have been made pursuant to subsection (2) of this section during the reporting period, the report shall so indicate.

(3) *Licensing the incorporation of naturally occurring and accelerator-produced radioactive material into gas and aerosol detectors.* An application for a specific license authorizing the incorporation of NARM into gas and aerosol detectors to be distributed to persons exempt under WAC ((~~246-232-010 (2)(c)(iii)~~)) 246-232-012 will be approved if the application satisfies requirements equivalent to those contained in Section 32.26 of 10 CFR Part 32.

## Final Cost of Rulemaking for WAC

<b>FTE/SALARIES</b>	<b>Hours</b>	<b>Hourly</b>	<b>Total</b>
<b>Positions</b>	<b>Worked</b>	<b>Rate</b>	
WMS 2	23	\$29.76	\$684.48
		\$0.00	\$0.00
		\$0.00	\$0.00
		\$0.00	\$0.00
		\$0.00	\$0.00
<b>TOTAL SALARIES</b>			<b>\$684.48</b>
<b>Benefits</b>		24%	<b>\$164.28</b>
<b>TOTAL SALARIES/BENEFITS</b>			<b>\$848.76</b>
<hr/>			
<b>GOODS AND SERVICES</b>			
Attorney General Cost			\$420.00
Supplies/Services			\$0.00
Postage			\$148.50
Rent-Conference Rooms			\$0.00
Printing			\$45.00
Misc.			\$0.00
<b>TOTAL GOODS &amp; SERVICES</b>			<b>\$613.50</b>
<b>Travel</b>			<b>\$0.00</b>
<b>Equipment</b>			<b>\$0.00</b>
<b>SUBTOTAL</b>			<b>\$1,462.26</b>
<b>Indirects</b>	21%		<b>\$307.07</b>
<b>TOTAL</b>			<b>\$1,769.33</b>





**RULE MAKING ORDER**  
(RCW 34.05.360)

**CR-103** (07/10/97)

Agency: Department of Health

- Permanent Rule
- Emergency Rule
- Expedited Adoption
- Expedited Repeal

(1) Date of Adoption:  
December 26, 2000

(2) Purpose:  
To bring radiation regulations into conformance with the US Nuclear Regulatory Commission rules on exemption of C-14 urea capsules and to make other corrections and housekeeping changes.

(3) Citation of Rules Affected by this order:  
Repealed:  
Amended: WAC 246-232-006 thru -014, -040, -120 & -130  
Suspended:

(4) Statutory authority for adoption: RCW 70.98.050  
Other Authority:

**PERMANENT RULE ONLY (including EXPEDITED ADOPTION)**  
Adopted under notice filed as WSR 00-19-080 on September 20, 2000 (date).  
Describe any changes other than editing from proposed to adopted version:  
See Attachment A

**EMERGENCY RULE ONLY**  
Under RCW 34.05.350 the agency for good cause finds:  
 (a) That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.  
 (b) That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.  
  
Reasons for this finding:

**EXPEDITED REPEAL ONLY**  
Under Preproposal Statement of Inquiry filed as WSR \_\_\_\_\_ on \_\_\_\_\_ (date).  
(5.3) Any other findings required by other provisions of law as precondition to adoption of effectiveness of rule?  
 Yes  No If Yes, explain:

(6) Effective date of rule:  
**Permanent Rules**                      **Emergency Rules**  
or Expedited Repeal  
 31 days after filing                       Immediately  
 Other (specify) \_\_\_\_\_\*                       Later (specify) \_\_\_\_\_  
\*(If less than 31 days after filing, specific finding in 5.3 under RCW 34.05.380(3) is required)

NAME (TYPE OR PRINT)  
Mary C. Selecky  
SIGNATURE  
*Mary Ellison for Mary Selecky*  
TITLE *Deputy Secretary*                      DATE *12/26/00*

CODE REVISER USE ONLY

CODE REVISER'S OFFICE  
STATE OF WASHINGTON

DEC 29 2000

TIME *1:05* AM/PM *PM*  
WSR *01-02-068*

**Note: if any category is left blank, it will be calculated as zero.  
No descriptive text.**

**Count by whole WAC sections only, from the WAC number through the history note.  
A section may be counted in more than one category.**

**The number of sections adopted in order to comply with:**

Federal statute:	New	___	Amended	_____	Repealed	_____
Federal rules or standards:	New	<u>4</u>	Amended	_____	Repealed	_____
Recently enacted state statutes:	New		Amended	_____	Repealed	_____

\*(current calendar year)

**The number of sections adopted at the request of a nongovernmental entity:**

New	_____	Amended	_____	Repealed	_____
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**The number of sections adopted on the agency's own initiative:**

New	_____	Amended	_____	Repealed	_____
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**The number of sections adopted in order to clarify, streamline, or reform agency procedures:**

New	<u>7</u>	Amended	<u>4</u>	Repealed	_____
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**The number of sections adopted using:**

Negotiated rule making:	New	_____	Amended	_____	Repealed	_____
Pilot rule making:	New	_____	Amended	_____	Repealed	_____
Other alternative rule making:	New	<u>8</u>	Amended	<u>4</u>	Repealed	_____

Attachment A  
CR-103  
WAC 246-232-006  
WSR 00-19-080; September 20, 2000

Describe any changes other than editing from proposed to adopted version:

WAC 246-232-008(2)(a):

This change was made at the request of the Nuclear Regulatory Commission (NRC) to adjust the measurement of "1 centimeter" to "10 centimeters". This change corrects an error made in previous rule revisions, brings the rule into conformance with NRC rules, and effectively relaxes the criteria.

WAC 246-232-009(7)(a) & (b): This change was made at the request of the NRC to specify the number and quantity of exempt sources of radioactive material allowed for use in ionizing radiation measuring instruments. This change corrects an omission made in previous rule revisions, brings the rule into conformance with NRC rules, and is not expected to impact regulated parties in Washington.

WAC 246-232-011, & 013: These changes were made at the request of the NRC to clarify who must be licensed by the NRC under Sections 32.22, 32.16 and 32.17 of 10 C.F.R. Part 32. These changes correct errors made in previous rule revisions, and bring the rule into conformance with NRC rules.

Additional changes from the proposed to adopted versions of the rule were editorial and made solely for clarity.

NEW SECTION

**WAC 246-232-006 Exemption of certain source material.** (1) A person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that the person receives, possesses, uses, owns, or transfers source material in any chemical mixture, compound, solution or alloy in which the source material is by weight less than 1/20 of one percent (0.05 percent) of the mixture, compound, solution, or alloy.

(2) A person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that the person receives, possesses, uses or transfers unrefined and unprocessed ore containing source material, provided such person shall not refine or process such ore unless authorized to do so in a specific license.

(3) A person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that the person receives, possesses, uses or transfers:

- (a) Any quantities of thorium contained in:
  - (i) Incandescent gas mantles;
  - (ii) Vacuum tubes;
  - (iii) Welding rods;
  - (iv) Electric lamps for illuminating purposes if each lamp contains fifty milligrams or less of thorium;
  - (v) Germicidal lamps, sunlamps and lamps for outdoor or industrial lighting if each lamp contains two grams or less of thorium;
  - (vi) Rare earth metals and compounds, mixtures, and products containing 0.25 percent or less by weight thorium, uranium, or any combination of these; or
  - (vii) Personnel neutron dosimeters if each dosimeter contains 50 milligrams or less of thorium;
- (b) Source material contained in the following products:
  - (i) Glazed ceramic tableware if the glaze contains twenty percent or less by weight source material; and
  - (ii) Piezoelectric ceramic containing two percent or less by weight source material;
- (c) Photographic film, negatives and prints containing uranium or thorium;
- (d) Any finished product or part fabricated of, or containing, tungsten-thorium or magnesium-thorium alloys if the thorium content of the alloy is four percent or less by weight. The exemption contained in this subparagraph shall not be deemed to authorize the chemical, physical or metallurgical treatment or processing of any such product or part;
- (e) Thorium contained in finished optical lenses if each lens contains thirty percent or less by weight of thorium. The exemption contained in this subparagraph shall not be deemed to

authorize either:

(i) The shaping, grinding or polishing of lens or manufacturing processes other than the assembly of such lens into optical systems and devices without alteration of the lens; or

(ii) The receipt, possession, use or transfer of thorium contained in contact lenses, or in spectacles, or in eyepieces in binoculars or other optical instruments;

(f) Uranium contained in detector heads for use in fire detection units if each detector head contains 0.005 microcuries or less of uranium; or

(g) Thorium contained in any finished aircraft engine part containing nickel-thoria alloy if:

(i) The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and

(ii) The thorium content in the nickel-thoria alloy is four percent or less by weight.

(4) The exemptions in subsection (3) of this section do not authorize the manufacture of any of the products described.

#### NEW SECTION

##### **WAC 246-232-007 Exemption of certain depleted uranium items.**

(1) A person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that the person receives, possesses, uses or transfers:

(a) Depleted uranium contained in counterweights installed in aircraft, rockets, projectiles and missiles, or stored or handled in connection with installation or removal of such counterweights if:

(i) The counterweights are manufactured in accordance with a specific license issued by the United States Nuclear Regulatory Commission authorizing distribution by the licensee pursuant to 10 C.F.R. Part 40;

(ii) Each counterweight has been impressed with the following legend clearly legible through any plating or other covering: "DEPLETED URANIUM" \*;

(iii) Each counterweight is durably and legibly labeled or marked with the identification of the manufacturer and the statement: "UNAUTHORIZED ALTERATIONS PROHIBITED" \*; and

(iv) The exemption contained in this subparagraph shall not be deemed to authorize the chemical, physical or metallurgical treatment or processing of any such counterweight other than repair or restoration of any plating or other covering;

\*Note: The requirements specified in (c) (v) (B) and (C) of this subsection need not be met by counterweights manufactured prior to December 31, 1969: Provided, That such counterweights are impressed with the legend, "CAUTION - RADIOACTIVE MATERIAL - URANIUM," as previously required by the regulations.

(b) Natural or depleted uranium used as shielding constituting part of any shipping container which is conspicuously and legibly

impressed with the legend "CAUTION - RADIOACTIVE SHIELDING - URANIUM" and the uranium metal is encased in mild steel or in an equally fire resistant metal of a minimum wall thickness of 3.2 millimeters.

(2) The exemptions in this subsection do not authorize the manufacture of any of the products described.

#### NEW SECTION

**WAC 246-232-008 Exemption of certain timepieces, hands or dials.** A person is exempt from these regulations to the extent the person receives, possesses, uses, transfers, owns or acquires, and does not apply radioactive material to, or incorporate radioactive material into, the following timepieces or hands or dials containing the following specified quantities of radioactive material and the following specified levels of radiation\*:

\*Note: Authority to transfer possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source material or by-product material whose subsequent possession, use, transfer and disposal by all other persons who are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission, Washington, D.C. 20555.

- (1) (a) 25 millicuries or less of tritium per timepiece;
- (b) 5 millicuries or less of tritium per hand;
- (c) 15 millicuries or less of tritium per dial (bezels when used shall be considered as part of the dial);
- (d) 100 microcuries or less of promethium-147 per watch or 200 microcuries or less of promethium-147 per any other timepiece;
- (e) 20 microcuries or less of promethium-147 per watch hand or 40 microcuries or less of promethium-147 per other timepiece hand;
- (f) 60 microcuries or less of promethium-147 per watch dial or 120 microcuries or less of promethium-147 per other timepiece dial (bezels when used shall be considered as part of the dial);
- (2) The levels of radiation from hands and dials containing promethium-147 will not exceed, when measured through 50 milligrams per square centimeter of absorber:
  - (a) For wrist watches, 0.1 millirad per hour at 10 centimeters from any surface;
  - (b) For pocket watches, 0.1 millirad per hour at 1 centimeter from any surface;
  - (c) For any other timepiece, 0.2 millirad per hour at 10 centimeters from any surface.
- (3) One microcurie of radium-226 per timepiece in timepieces manufactured prior to the effective date of these regulations.

NEW SECTION

WAC 246-232-009 Exemption of certain items containing radioactive material. A person is exempt from these regulations to the extent the person receives, possesses, uses, transfers, owns or acquires, and does not apply radioactive material to, or incorporate radioactive material into, the following products:\*

\*Note: Authority to transfer possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source material or by-product material whose subsequent possession, use, transfer and disposal by all other persons who are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission, Washington, D.C. 20555.

(1) Lock illuminators containing 15 millicuries or less of tritium or 2 millicuries or less of promethium-147 installed in automobile locks. The levels of radiation from each lock illuminator containing promethium-147 will not exceed 1 millirad per hour at 1 centimeter from any surface when measured through 50 milligrams per square centimeter of absorber.

(2) Precision balances containing 1 millicurie or less of tritium per balance or 0.5 millicurie or less of tritium per balance part.

(3) Automobile shift quadrants containing 25 millicuries or less of tritium.

(4) Marine compasses containing 750 millicuries or less of tritium gas and other marine navigational instruments containing 250 millicuries or less of tritium gas.

(5) Thermostat dials and pointers containing 25 millicuries or less of tritium per thermostat.

(6) Electron tubes\* if each tube contains no more than one of the following specified quantities of radioactive material and the levels of radiation from each electron tube do not exceed 1 millirad per hour at 1 centimeter from any surface when measured through 7 milligrams per square centimeter of absorber:

(a) 150 millicuries or less of tritium per microwave receiver protector tube or 10 millicuries or less of tritium per any other electron tube;

(b) 1 microcurie or less of cobalt-60;

(c) 5 microcuries or less of nickel-63;

(d) 30 microcuries or less of krypton-85;

(e) 5 microcuries or less of cesium-137;

(f) 30 microcuries or less of promethium-147;

(g) 1 microcurie or less of radium-226:

\*Note: For purposes of this subdivision, "electron tubes" include spark gap tubes, power tubes, gas tubes including glow lamps, receiving tubes, microwave tubes, indicator tubes, pick-up tubes, radiation detection tubes, and any other completely sealed tube that is designed to conduct or control electrical currents.

(7) Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, one or more but not to exceed 10 exempt sources of radioactive material.

(a) Each individual source shall not exceed 0.05 microcuries of americium-241 or the applicable exempt quantity set forth in WAC 246-232-120, Schedule B.

(b) An individual source may contain more than one radionuclide but the total quantity in the individual source shall not exceed unity based on the sum of the fractional parts of one or

more of the exempt quantities set forth in WAC 246-232-120, Schedule B. For purposes of this subsection, 0.05 microcuries of americium-241 is considered an exempt quantity.

(8) Spark gap irradiators containing 1 microcurie or less of cobalt-60 per spark gap irradiator for use in electrically ignited fuel oil burners having a firing rate of at least three gallons (11.4 liters) per hour.

AMENDATORY SECTION (Amending WSR 98-13-037, filed 6/8/98, effective 7/9/98)

WAC 246-232-010 ((Exemptions.)) Exempt concentrations and exempt quantities. (1) ~~((Source material.~~

~~(a) Any person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that such person receives, possesses, uses, owns, or transfers source material in any chemical mixture, compound, solution or alloy in which the source material is by weight less than 1/20 of one percent (0.05 percent) of the mixture, compound, solution, or alloy.~~

~~(b) Any person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that such person receives, possesses, uses or transfers unrefined and unprocessed ore containing source material. Provided, That, except as authorized in a specific license, such person shall not refine or process such ore.~~

~~(c) Any person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that such person receives, possesses, uses or transfers:~~

~~(i) Any quantities of thorium contained in:~~

~~(A) Incandescent gas mantles;~~

~~(B) Vacuum tubes;~~

~~(C) Welding rods;~~

~~(D) Electric lamps for illuminating purposes provided that each lamp does not contain more than fifty milligrams of thorium;~~

~~(E) Germicidal lamps, sunlamps and lamps for outdoor or industrial lighting provided that each lamp does not contain more than two grams of thorium;~~

~~(F) Rare earth metals and compounds, mixtures, and products containing not more than 0.25 percent by weight thorium, uranium, or any combination of these; or~~

~~(G) Personnel neutron dosimeters, provided each dosimeter does not contain more than 50 milligrams of thorium;~~

~~(ii) Source material contained in the following products:~~

~~(A) Glazed ceramic tableware. Provided, That the glaze contains not more than twenty percent by weight source material, and~~

~~(B) Piezoelectric ceramic containing not more than two percent by weight source material;~~



~~(iii) Photographic film, negatives and prints containing uranium or thorium;~~

~~(iv) Any finished product or part fabricated of, or containing, tungsten-thorium or magnesium-thorium alloys. Provided, That the thorium content of the alloy does not exceed four percent by weight and that the exemption contained in this subparagraph shall not be deemed to authorize the chemical, physical or metallurgical treatment or processing of any such product or part;~~

~~(v) Depleted uranium contained in counterweights installed in aircraft, rockets, projectiles and missiles, or stored or handled in connection with installation or removal of such counterweights, provided that:~~

~~(A) The counterweights are manufactured in accordance with a specific license issued by the United States Nuclear Regulatory Commission authorizing distribution by the licensee pursuant to 10 CFR Part 40;~~

~~(B) Each counterweight has been impressed with the following legend clearly legible through any plating or other covering: "DEPLETED URANIUM" \*;~~

~~(C) Each counterweight is durably and legibly labeled or marked with the identification of the manufacturer and the statement: "UNAUTHORIZED ALTERATIONS PROHIBITED" \*; and~~

~~(D) The exemption contained in this subparagraph shall not be deemed to authorize the chemical, physical or metallurgical treatment or processing of any such counterweight other than repair or restoration of any plating or other covering;~~

~~\*Note: The requirements specified in (v)(B) and (C) of this subsection need not be met by counterweights manufactured prior to December 31, 1969. Provided, That such counterweights are impressed with the legend, "CAUTION - RADIOACTIVE MATERIAL - URANIUM," as previously required by the regulations.~~

~~(vi) Depleted uranium used as shielding constituting part of any shipping container which is conspicuously and legibly impressed with the legend "CAUTION - RADIOACTIVE SHIELDING - URANIUM" and the uranium metal is encased in mild steel or in an equally fire resistant metal of a minimum wall thickness of 3.2 millimeters.~~

~~(vii) Thorium contained in finished optical lenses. Provided, That each lens does not contain more than thirty percent by weight of thorium, and that the exemption contained in this subparagraph shall not be deemed to authorize either:~~

~~(A) The shaping, grinding or polishing of such lens or manufacturing processes other than the assembly of such lens into optical systems and devices without alteration of the lens; or~~

~~(B) The receipt, possession, use or transfer of thorium contained in contact lenses, or in spectacles, or in eyepieces in binoculars or other optical instruments;~~

~~(viii) Uranium contained in detector heads for use in fire detection units. Provided, That each detector head contains not more than 0.005 microcuries of uranium; or~~

~~(ix) Thorium contained in any finished aircraft engine part containing nickel-thoria alloy, provided that:~~

~~(A) The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and~~

~~(B) The thorium content in the nickel-thoria alloy does not~~

~~exceed four percent by weight.~~

~~(d) The exemptions in (c) of this subsection do not authorize the manufacture of any of the products described.~~

~~(2) Radioactive material other than source material.~~

~~(a)) Exempt concentrations.~~

~~((+)) (a) Except as provided in ((+)(ii)) (b) of this subsection ((any)), a person is exempt from this chapter and chapters 246-233 and 246-235 WAC to the extent that ((such)) the person receives, possesses, uses, transfers, owns or acquires products or materials containing radioactive material in concentrations ~~((not in excess of))~~ less than or equal to those listed in WAC 246-232-130, Schedule C.~~

~~((+)) (b) No person may introduce radioactive material into a product or material, knowing or having reason to believe, that it will be transferred to persons exempt under (a)((+)) of this subsection or equivalent regulations of the United States Nuclear Regulatory Commission, any agreement state or licensing state, except in accordance with a specific license issued ((pursuant to)) under WAC 246-235-105 or the general license provided in WAC 246-232-040.~~

~~((+)) (2) Exempt quantities.~~

~~((+)) (a) Except as provided in (b)((+)) and ((+)) (c) of this subsection ((any)), a person is exempt from these regulations to the extent that such person receives, possesses, uses, transfers, owns or acquires radioactive material in individual quantities each of which ~~((does not exceed))~~ is less than or equal to the applicable quantity set forth in WAC 246-232-120, Schedule B.~~

~~((+)) (b) This ((paragraph, WAC 246-232-010 (2)(b),)) subsection does not authorize the production, packaging or repackaging of radioactive material for purposes of commercial distribution, or the incorporation of radioactive material into products intended for commercial distribution.~~

~~((+)) (c) No person may, for purposes of commercial distribution, transfer radioactive material in the individual quantities set forth in WAC 246-232-120, Schedule B, knowing or having reason to believe that such quantities of radioactive material will be transferred to persons exempt under ((+)) subsection (2) of this ((subsection)) section or equivalent regulations of the United States Nuclear Regulatory Commission or any agreement state or licensing state, except in accordance with a specific license issued by the United States Nuclear Regulatory Commission, ((pursuant to)) under Section 32.18 of 10 CFR Part 32 or by the department ((pursuant to)) under WAC 246-235-105 which license states that the radioactive material may be transferred by the licensee to persons exempt under ((+)) subsection (2) of this ((subsection)) section or the equivalent regulations of the United States Nuclear Regulatory Commission or any agreement state or licensing state.~~

~~((+)) Exempt items.~~

~~(i) Certain items containing radioactive material. Except for persons who apply radioactive material to, or persons who~~

~~incorporate radioactive material into the following products, any person is exempt from these regulations to the extent that person receives, possesses, uses, transfers, owns or acquires the following products:\*~~

\*Note: Authority to transfer possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source material or byproduct material whose subsequent possession, use, transfer and disposal by all other persons who are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission, Washington, D.C. 20555.

~~(A) Timepieces or hands or dials containing not more than the following specified quantities of radioactive material and not exceeding the following specified levels of radiation:~~

~~25 millicuries of tritium per timepiece,  
5 millicuries of tritium per hand,  
15 millicuries of tritium per dial (bezels when used shall be considered as part of the dial),  
100 microcuries of promethium - 147 per watch or 200 microcuries of promethium - 147 per any other timepiece,  
20 microcuries of promethium - 147 per watch hand or 40 microcuries of promethium - 147 per other timepiece hand,  
60 microcuries of promethium - 147 per watch dial or 120 microcuries of promethium - 147 per other timepiece dial (bezels when used shall be considered as part of the dial),~~

~~The levels of radiation from hands and dials containing promethium - 147 will not exceed, when measured through 50 milligrams per square centimeter of absorber:~~

~~For wrist watches, 0.1 millirad per hour at 1 centimeter from any surface,~~

~~For pocket watches, 0.1 millirad per hour at 1 centimeter from any surface,~~

~~For any other timepiece, 0.2 millirad per hour at 10 centimeters from any surface.~~

~~One microcurie of radium-226 per timepiece in timepieces manufactured prior to the effective date of these regulations.~~

~~(B) Lock illuminators containing not more than 15 millicuries of tritium or not more than 2 millicuries of promethium - 147 installed in automobile locks. The levels of radiation from each lock illuminator containing promethium - 147 will not exceed 1 millirad per hour at 1 centimeter from any surface when measured through 50 milligrams per square centimeter of absorber.~~

~~(C) Precision balances containing not more than 1 millicurie of tritium per balance or not more than 0.5 millicurie of tritium per balance part.~~

~~(D) Automobile shift quadrants containing not more than 25 millicuries of tritium.~~

~~(E) Marine compasses containing not more than 750 millicuries of tritium gas and other marine navigational instruments containing not more than 250 millicuries of tritium gas.~~

~~(F) Thermostat dials and pointers containing not more than 25 millicuries of tritium per thermostat.~~

~~(G) Electron tubes. Provided, That each tube does not contain~~

~~(A) Except for persons who manufacture, process or produce gas and aerosol detectors containing radioactive material, any person is exempt from these regulations to the extent that such person receives, possesses, uses, transfers, owns or acquires radioactive material.~~

~~(iii) Gas and aerosol detectors containing radioactive material which were manufactured prior to October 1983.~~

~~(B) Radium-226. Any person is exempt from these regulations to the extent that such person receives, possesses, uses, transfers or owns articles containing less than 0.1 microcurie of radium-226 toys or adornments.~~

~~(A) Tritium, krypton-85 or promethium-147. Except for persons who manufacture, process or produce self-luminous products containing tritium, krypton-85 or promethium-147, any person is exempt from these regulations to the extent that such person receives, possesses, uses, transfers, owns or acquires tritium, krypton-85 or promethium-147 in self-luminous products manufactured, processed, produced, imported or transferred in accordance with a specific license issued by the United States Nuclear Regulatory Commission pursuant to section 32.22 of 10 CFR Part 32, which license authorizes the transfer of the product to persons who are exempt from regulatory requirements. The exemption in (c) (ii) of this subsection does not apply to tritium, krypton-85 or promethium-147 used in products for frivolous purposes or in~~

~~(ii) Self-luminous products containing radioactive material(s):~~

~~(i) Spark gap irradiators containing not more than 1 microcurie of cobalt-60 per spark gap irradiator for use in electrically ignited fuel oil burners having a firing rate of at least three gallons (11.4 liters) per hour.~~

~~(H) Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, a source of radioactive material not exceeding 0.05 microcuries of americium-241 or the applicable quantity set forth in WAC 246-232-120, Schedule B.~~

~~And provided further, that the levels of radiation from each electron tube containing radioactive material does not exceed 1 millirad per hour at 1 centimeter from any surface when measured through 7 milligrams per square centimeter of absorber.\*~~

- ~~(bb) 1 microcurie of cobalt-60;~~
- ~~(cc) 5 microcuries of nickel-63;~~
- ~~(dd) 30 microcuries of krypton-85;~~
- ~~(ee) 5 microcuries of cesium-137;~~
- ~~(ff) 30 microcuries of promethium-147;~~
- ~~(gg) 1 microcurie of radium-226;~~

~~(aa) 150 millicuries of tritium per microwave receiver protector tube or 10 millicuries of tritium per any other electron tube;~~

~~more than one of the following specified quantities of radioactive material:~~

\*Note: For purposes of this subdivision, "electron tubes" include spark gap tubes; power tubes; gas tubes including glow lamps; receiving tubes; microwave tubes; indicator tubes; pick-up tubes; radiation detection tubes; and any other completely sealed tube that is designed to conduct or control electrical currents.

~~material in gas and aerosol detectors designed to protect life or property from fires and airborne hazards. Provided, That detectors containing radioactive material shall have been manufactured, imported, or transferred in accordance with a specific license issued by the United States Nuclear Regulatory Commission\* or an agreement state, pursuant to Section 32.26 of 10 CFR Part 32, or licensing state pursuant to WAC 246-235-105, which authorizes the transfer of the detectors to persons who are exempt from regulatory requirements.~~

~~\*Note: Authority to transfer possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source material or byproduct material whose subsequent possession, use, transfer and disposal by all other persons are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission, Washington, D.C. 20555.~~

~~(B) Gas and aerosol detectors previously manufactured and distributed to general licensees in accordance with a specific license issued by an agreement state shall be considered exempt under (c)(iii)(A) of this subsection. Provided, That the device is labeled in accordance with the specific license authorizing distribution of the generally licensed device. And provided further, That they meet the requirements of WAC 246-235-105.~~

~~(C) Gas and aerosol detectors containing naturally occurring and accelerator-produced radioactive material (NARM) previously manufactured and distributed in accordance with a specific license issued by a licensing state shall be considered exempt under (c)(iii)(A) of this subsection. Provided, That the device is labeled in accordance with the specific license authorizing distribution of the generally licensed device, and provided further that they meet the requirements of WAC 246-235-105.~~

~~(iv) Resins containing scandium-46 and designed for sand consolidation in oil wells. Any person is exempt from these regulations to the extent that such person receives, possesses, uses, transfers, owns or acquires synthetic plastic resins containing scandium-46 which are designed for sand consolidation in oil wells. Such resins shall have been manufactured or imported in accordance with a specific license issued by the United States Nuclear Regulatory Commission or shall have been manufactured in accordance with the specifications contained in a specific license issued by the department or any agreement state to the manufacturer of such resins pursuant to licensing requirements equivalent to those in Sections 32.16 and 32.17 of 10 CFR Part 32 of the regulations of the United States Nuclear Regulatory Commission. This exemption does not authorize the manufacture of any resins containing scandium-46.)~~

#### NEW SECTION

WAC 246-232-011 Exemption of certain self-luminous products containing radioactive material(s). (1) Tritium, krypton-85 or promethium-147. A person is exempt from these regulations to the

extent that the person receives, possesses, uses, transfers, owns or acquires, and does not manufacture, process, produce, or initially transfer for sale or distribution, self-luminous products containing tritium, krypton-85 or promethium-147 in self-luminous products manufactured, processed, produced, imported or initially transferred in accordance with a specific license issued by the United States Nuclear Regulatory Commission under Section 32.22 of 10 C.F.R. Part 32, which license authorizes the transfer of the product to persons who are exempt from regulatory requirements. The exemption in this subsection does not apply to tritium, krypton-85 or promethium-147 used in products primarily for frivolous purposes or in toys or adornments.

(2) Radium-226. A person is exempt from these regulations to the extent that the person receives, possesses, uses, transfers or owns articles containing less than 0.1 microcurie of radium-226 which were manufactured prior to October 1983.

#### NEW SECTION

**WAC 246-232-012 Exemption of certain gas and aerosol detectors containing radioactive material.** (1) A person is exempt from these regulations to the extent that the person receives, possesses, uses, transfers, owns or acquires, and does not manufacture, process or produce, radioactive material in gas and aerosol detectors designed to protect life or property from fires and airborne hazards if the detectors have been manufactured, imported, or transferred in accordance with a specific license issued by the United States Nuclear Regulatory Commission\* or an agreement state, under Section 32.26 of 10 C.F.R. Part 32, or licensing state under WAC 246-235-105, which authorizes the transfer of the detectors to persons who are exempt from regulatory requirements.

\*Note: Authority to transfer possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source material or by-product material whose subsequent possession, use, transfer and disposal by all other persons are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) Gas and aerosol detectors previously manufactured and distributed to general licensees in accordance with a specific license issued by an agreement state shall be considered exempt under subsection (1) of this section if the device is labeled in accordance with the specific license authorizing distribution of the generally licensed device and if the device meets the requirements of WAC 246-235-105.

(3) Gas and aerosol detectors containing naturally occurring and accelerator-produced radioactive material (NARM) previously manufactured and distributed in accordance with a specific license issued by a licensing state shall be considered exempt under subsection (1) of this section if the device is labeled in accordance with the specific license authorizing distribution of

the generally licensed device, and if the device meets the requirements of WAC 246-235-105.

NEW SECTION

**WAC 246-232-013 Exemption of certain resins containing scandium-46 and designed for sand consolidation in oil wells.** A person is exempt from these regulations to the extent that the person receives, possesses, uses, transfers, owns or acquires synthetic plastic resins containing scandium-46 that are designed for sand consolidation in oil wells. The resins shall have been manufactured or imported in accordance with a specific license issued by the United States Nuclear Regulatory Commission or shall have been manufactured in accordance with the specifications contained in a specific license issued by the department or any agreement state to the manufacturer of resins under licensing requirements equivalent to those in Sections 32.16 and 32.17 of 10 C.F.R. Part 32 of the regulations of the United States Nuclear Regulatory Commission. This exemption does not authorize the manufacture or initial transfer for sale or distribution of any resins containing scandium-46.

NEW SECTION

**WAC 246-232-014 Exemption of C-14 urea diagnostic capsules for human use.** (1) Except as provided in subsections (2) and (3) of this section, a person is exempt from the requirements for a license set forth in chapters 246-233 and 246-235 WAC if the person receives, possesses, uses, transfers, owns, or acquires capsules containing 37 kilobecquerels (1 microcurie) carbon-14 urea (allowing for nominal variation that may occur during the manufacturing process) each, for "in vivo" diagnostic use for humans.

(2) A person who desires to use the capsules for research involving human subjects shall apply for and receive a specific license under WAC 246-235-080.

(3) A person who desires to manufacture, prepare, process, produce, package, repackage, or transfer for commercial distribution these capsules shall apply for and receive a specific license from the United States Nuclear Regulatory Commission under Section 32.21 of 10 C.F.R. Part 32.

(4) Nothing in this section relieves persons from complying with applicable United States Food and Drug Administration, other federal, and state requirements governing receipt, administration, and use of drugs.

AMENDATORY SECTION (Amending WSR 99-15-105, filed 7/21/99, effective 8/21/99)

**WAC 246-232-040 Reciprocal recognition of licenses. (1)**

Subject to these regulations, any person who holds a specific license from the United States Nuclear Regulatory Commission or any agreement state or licensing state, and issued by the agency having jurisdiction where the licensee maintains an office for directing the licensed activity and at which radiation safety records are normally maintained, is hereby granted a general license to conduct the activities authorized in such licensing document within this state for a period not in excess of one hundred eighty days in that twelve month period which commences the date approval is granted, and the appropriate fee received, by the department provided that:

(a) The licensing document does not limit the activity authorized by such document to specified installations or locations;

(b) The licensed activity is not conducted in an area under exclusive federal jurisdiction;

(c) The out-of-state licensee notifies the department in writing and pays or has paid the appropriate fee (refer to chapter 246-254 WAC), at least three days prior to each entry to the state to engage in such activity. The written notification must be sent to the Radioactive Materials Section, Department of Health, Mailstop 47827, Olympia, Washington 98504-7827 and the fee should be sent to Washington State Department of Health, Revenue Accounting, P.O. Box 1099, Olympia, Washington 98504. Such notification shall indicate the location, period, and type of proposed possession and use within the state, and shall be accompanied by copies of the pertinent licensing documents. If, for a specific case, the three-day period would impose an undue hardship on the out-of-state licensee, the licensee may, upon telephone application to the department (360 236-3220), obtain permission to proceed sooner. The department may waive the requirement for filing additional written notifications during the remainder of the twelve months following the receipt of the initial notification from a person engaging in activities under the general license provided in this subsection;

(d) The out-of-state licensee complies with all applicable regulations of the department and with all the terms and conditions of the licensing document, except any such terms and conditions which may be inconsistent with applicable regulations of the department;

(e) The out-of-state licensee supplies such other information as the department may request; and

(f) The out-of-state licensee shall not transfer or dispose of radioactive material possessed or used under the general license



provided in this subsection except by transfer to a person:

(i) Specifically licensed by the department or by the United States Nuclear Regulatory Commission, an agreement state or a licensing state to receive such material; or

(ii) Exempt from the requirements for a license for such material under WAC 246-232-010 (~~((2)(a))~~) (1).

(2) Notwithstanding the provisions of subsection (1) of this section, any person who holds a specific license issued by the United States Nuclear Regulatory Commission, an agreement state or a licensing state authorizing the holder to manufacture, transfer, install, or service a device described in WAC 246-233-020(4) within the areas subject to the jurisdiction of the licensing body is hereby granted a general license to install, transfer, demonstrate or service a device in this state in areas not under exclusive federal jurisdiction provided that:

(a) Such person shall file a report with the department within thirty days after the end of each calendar quarter in which any device is transferred to or installed in this state. Each such report shall identify each general licensee to whom such device is transferred by name and address, the type of device transferred, and the quantity and type of radioactive material contained in the device;

(b) The device has been manufactured, labeled, installed, and serviced in accordance with applicable provisions of the specific license issued to such person by the United States Nuclear Regulatory Commission, an agreement state or a licensing state;

(c) Such person shall assure that any labels required to be affixed to the device under regulations of the authority which licensed manufacture of the device bear a statement that "Removal of this label is prohibited"; and

(d) The holder of the specific license shall furnish to each general licensee to whom such device is transferred or on whose premises such device is installed a copy of the general license contained in WAC 246-233-020(4).

(3) The department may withdraw, limit, or qualify its acceptance of any specific license or equivalent licensing document issued by another agency, or any product distributed pursuant to such licensing document, upon determining that such action is necessary in order to prevent undue hazard to public health and safety or property.

AMENDATORY SECTION (Amending Order 184, filed 7/24/91, effective 8/24/91)

**WAC 246-232-120 Schedule B, exempt quantities of radioactive materials.** (See also WAC 246-232-010 (2) (~~((b))~~)).)

Radioactive Material	Microcuries
Antimony-122 (Sb-122)	100
Antimony-124 (Sb-124)	10
Antimony-125 (Sb-125)	10
Arsenic-73 (As-73)	100
Arsenic-74 (As-74)	10
Arsenic-76 (As-76)	10
Arsenic-77 (As-77)	100
Barium-131 (Ba-131)	10
Barium-133 (Ba-133)	10
Barium-140 (Ba-140)	10
Bismuth-210 (Bi-210)	1
Bromine-82 (Br-82)	10
Cadmium-109 (Cd-109)	10
Cadmium-115m (Cd-115m)	10
Cadmium-115 (Cd-115)	100
Calcium-45 (Ca-45)	10
Calcium-47 (Ca-47)	10
Carbon-14 (C-14)	100
Cerium-141 (Ce-141)	100
Cerium-143 (Ce-143)	100
Cerium-144 (Ce-144)	1
Cesium-129 (Cs-129)	100
Cesium-131 (Cs-131)	1,000
Cesium-134m (Cs-134m)	100
Cesium-134 (Cs-134)	1
Cesium-135 (Cs-135)	10
Cesium-136 (Cs-136)	10
Cesium-137 (Cs-137)	10
Chlorine-36 (Cl-36)	10
Chlorine-38 (Cl-38)	10
Chromium-51 (Cr-51)	1,000
Cobalt-57 (Co-57)	100
Cobalt-58m (Co-58m)	10
Cobalt-58 (Co-58)	10
Cobalt-60 (Co-60)	1
Copper-64 (Cu-64)	100
Dysprosium-165 (Dy-165)	10
Dysprosium-166 (Dy-166)	100
Erbium-169 (Er-169)	100
Erbium-171 (Er-171)	100
Europium-152 (Eu-152) 9.2h	100
Europium-152 (Eu-152) 13 yr	1
Europium-154 (Eu-154)	1
Europium-155 (Eu-155)	10

Radioactive Material	Microcuries
Fluorine-18 (F-18)	1,000
Gadolinium-153 (Gd-153)	10
Gadolinium-159 (Gd-159)	100
Gallium-67 (Ga-67)	100
Gallium-72 (Ga-72)	10
Germanium-71 (Ge-71)	100
Gold-198 (Au-198)	100
Gold-199 (Au-199)	100
Hafnium-181 (Hf-181)	10
Holmium-166 (Ho-166)	100
Hydrogen-3 (H-3)	1,000
Indium-111 (In-111)	100
Indium-113m (In-113m)	100
Indium-114m (In-114m)	10
Indium-115m (In-115m)	100
Indium-115 (In-115)	10
Iodine-123 (I-123)	100
Iodine-125 (I-125)	1
Iodine-126 (I-126)	1
Iodine-129 (I-129)	0.1
Iodine-131 (I-131)	1
Iodine-132 (I-132)	10
Iodine-133 (I-133)	1
Iodine-134 (I-134)	10
Iodine-135 (I-135)	10
Iridium-192 (Ir-192)	10
Iridium-194 (Ir-194)	100
Iron-52 (Fe-52)	10
Iron-55 (Fe-55)	100
Iron-59 (Fe-59)	10
Krypton-85 (Kr-85)	100
Krypton-87 (Kr-87)	10
Lanthanum-140 (La-140)	10
Lutetium-177 (Lu-177)	100
Manganese-52 (Mn-52)	10
Manganese-54 (Mn-54)	10
Manganese-56 (Mn-56)	10
Mercury-197m (Hg-197m)	100
Mercury-197 (Hg-197)	100
Mercury-203 (Hg-203)	10
Molybdenum-99 (Mo-99)	100
Neodymium-147 (Nd-147)	100
Neodymium-149 (Nd-149)	100
Nickel-59 (Ni-59)	100

Radioactive Material	Microcuries
Nickel-63 (Ni-63)	10
Nickel-65 (Ni-65)	100
Niobium-93m (Nb-93m)	10
Niobium-95 (Nb-95)	10
Niobium-97 (Nb-97)	10
Osmium-185 (So-185)	10
Osmium-191m (So-191m)	100
Osmium-191 (So-191)	100
Osmium-193 (So-193)	100
Palladium-103 (Pd-103)	100
Palladium-109 (Pd-109)	100
Phosphorus-32 (P-32)	10
Platinum-191 (Pt-191)	100
Platinum-193m (Pt-193m)	100
Platinum-193 (Pt-193)	100
Platinum-197m (Pt-197m)	100
Platinum-197 (Pt-197)	100
Polonium-210 (Po-210)	0.1
Potassium-42 (K-42)	10
Potassium-43 (K-43)	10
Praseodymium-142 (Pr-142)	100
Praseodymium-143 (Pr-143)	100
Promethium-147 (Pm-147)	10
Promethium-149 (Pm-149)	10
Radium-226 (Ra-226)	0.1
Rhenium-186 (Re-186)	100
Rhenium-188 (Re-188)	100
Rhodium-103m (Rh-103m)	100
Rhodium-105 (Rh-105)	100
Rubidium-81 (Rb-81)	10
Rubidium-86 (Rb-86)	10
Rubidium-87 (Rb-87)	10
Ruthenium-97 (Ru-97)	100
Ruthenium-103 (Ru-103)	10
Ruthenium-105 (Ru-105)	10
Ruthenium-106 (Ru-106)	1
Samarium-151 (Sm-151)	10
Samarium-153 (Sm-153)	100
Scandium-46 (Sc-46)	10
Scandium-47 (Sc-47)	100
Scandium-48 (Sc-48)	10
Selenium-75 (Se-75)	10
Silicon-31 (Si-31)	100
Silver-105 (Ag-105)	10

Radioactive Material	Microcuries
Silver-110m (Ag-110m)	1
Silver-111 (Ag-111)	100
Sodium-22 (Na-22)	10
Sodium-24 (Na-24)	10
Strontium-85 (Sr-85)	10
Strontium-89 (Sr-89)	1
Strontium-90 (Sr-90)	0.1
Strontium-91 (Sr-91)	10
Strontium-92 (Sr-92)	10
Sulphur-35 (S-35)	100
Tantalum-182 (Ta-182)	10
Technetium-96 (Tc-96)	10
Technetium-97m (Tc-97m)	100
Technetium-97 (Tc-97)	100
Technetium-99m (Tc-99m)	100
Technetium-99 (Tc-99)	10
Tellurium-125m (Te-125m)	10
Tellurium-127m (Te-127m)	10
Tellurium-127 (Te-127)	100
Tellurium-129m (Te-129m)	10
Tellurium-129 (Te-129)	100
Tellurium-131m (Te-131m)	10
Tellurium-132 (Te-132)	10
Terbium-160 (Tb-160)	10
Thallium-200 (Tl-200)	100
Thallium-201 (Tl-201)	100
Thallium-202 (Tl-202)	100
Thallium-204 (Tl-204)	10
Thulium-170 (Tm-170)	10
Thulium-171 (Tm-171)	10
Tin-113 (Sn-113)	10
Tin-125 (Sn-125)	10
Tungsten-181 (W-181)	10
Tungsten-185 (W-185)	10
Tungsten-187 (W-187)	100
Vanadium-48 (V-48)	10
Xenon-131m (Xe-131m)	1,000
Xenon-133 (Xe-133)	100
Xenon-135 (Xe-135)	100
Ytterbium-169 (Yb-169)	10
Ytterbium-175 (Yb-175)	100
Yttrium-87 (Y-87)	10
Yttrium-90 (Y-90)	10
Yttrium-91 (Y-91)	10

Radioactive Material	Microcuries
Yttrium-92 (Y-92)	100
Yttrium-93 (Y-93)	100
Zinc-65 (Zn-65)	10
Zinc-69m (Zn-69m)	100
Zinc-69 (Zn-69)	1,000
Zirconium-93 (Zr-93)	10
Zirconium-95 (Zr-95)	10
Zirconium-97 (Zr-97)	10
Any radioactive material not listed above other than alpha emitting radioactive material	0.1

AMENDATORY SECTION (Amending Order 184, filed 7/24/91, effective 8/24/91)

WAC 246-232-130 Schedule C, exempt concentrations. (See WAC 246-232-010 ((~~(2)~~(a))) (1).)

Element (atomic number)	Isotope	Column I Gas concentration $\mu\text{Ci/ml}^1$	Column II Liquid and solid concentration $\mu\text{Ci/ml}^2$
Antimony (51)	Sb-122		$3 \times 10^{-4}$
	Sb-124		$2 \times 10^{-4}$
	Sb-125		$1 \times 10^{-3}$
Argon (18)	Ar-37	$1 \times 10^{-3}$	
	Ar-41	$4 \times 10^{-7}$	
Arsenic (33)	As-73		$5 \times 10^{-3}$
	As-74		$5 \times 10^{-4}$
	As-76		$2 \times 10^{-4}$
	As-77		$8 \times 10^{-4}$
Barium (56)	Ba-131		$2 \times 10^{-3}$
	Ba-140		$3 \times 10^{-4}$
Beryllium (4)	Be-7		$2 \times 10^{-2}$
Bismuth (83)	Bi-206		$4 \times 10^{-4}$
Bromine (35)	Br-82	$4 \times 10^{-7}$	$3 \times 10^{-3}$
Cadmium (48)	Cd-109		$2 \times 10^{-3}$
	Cd-115m		$3 \times 10^{-4}$
	Cd-115		$3 \times 10^{-4}$
Calcium (20)	Ca-45		$9 \times 10^{-5}$
	Ca-47		$5 \times 10^{-4}$
Carbon (6)	C-14	$1 \times 10^{-6}$	$8 \times 10^{-3}$
Cerium (58)	Ce-141		$9 \times 10^{-4}$
	Ce-143		$4 \times 10^{-4}$
	Ce-144		$1 \times 10^{-4}$

Element (atomic number)	Isotope	Column I Gas concentration $\mu\text{Ci/ml}^1$	Column II Liquid and solid concentration $\mu\text{Ci/ml}^2$
Cesium (55)	Cs-131		$2 \times 10^{-2}$
	Cs-134m		$6 \times 10^{-2}$
	Cs-134		$9 \times 10^{-5}$
Chlorine (17)	Cl-38	$9 \times 10^{-7}$	$4 \times 10^{-3}$
Chromium (24)	Cr-51		$2 \times 10^{-2}$
Cobalt (27)	Co-57		$5 \times 10^{-3}$
	Co-58		$1 \times 10^{-3}$
	Co-60		$5 \times 10^{-4}$
Copper (29)	Cu-64		$3 \times 10^{-3}$
Dysprosium (66)	Dy-165		$4 \times 10^{-3}$
	Dy-166		$4 \times 10^{-4}$
Erbium (68)	Er-169		$9 \times 10^{-4}$
	Er-171		$1 \times 10^{-3}$
Europium (63)	Eu-152 (9.2 h)		$6 \times 10^{-4}$
	Eu-155		$2 \times 10^{-3}$
	Fluorine (9)	F-18	$2 \times 10^{-6}$
Gadolinium (64)	Gd-153		$2 \times 10^{-3}$
	Gd-159		$8 \times 10^{-4}$
Gallium (31)	Ga-72		$4 \times 10^{-4}$
Germanium (32)	Ge-71		$2 \times 10^{-2}$
Gold (79)	Au-196		$2 \times 10^{-3}$
	Au-198		$5 \times 10^{-4}$
	Au-199		$2 \times 10^{-3}$
Hafnium (72)	Hf-181		$7 \times 10^{-4}$
Hydrogen (1)	H-3	$5 \times 10^{-6}$	$3 \times 10^{-2}$
Indium (49)	In-113m		$1 \times 10^{-2}$
	In-114m		$2 \times 10^{-4}$
Iodine (53)	I-125	$3 \times 10^{-9}$	$2 \times 10^{-5}$
	I-126	$3 \times 10^{-9}$	$2 \times 10^{-5}$
	I-131	$3 \times 10^{-9}$	$2 \times 10^{-5}$
	I-132	$8 \times 10^{-8}$	$6 \times 10^{-4}$
	I-133	$1 \times 10^{-8}$	$7 \times 10^{-5}$
	I-134	$2 \times 10^{-7}$	$1 \times 10^{-3}$
Iridium (77)	Ir-190		$2 \times 10^{-3}$
	Ir-192		$4 \times 10^{-4}$
	Ir-194		$3 \times 10^{-4}$
Iron (26)	Fe-55		$8 \times 10^{-3}$
	Fe-59		$6 \times 10^{-4}$
Krypton (36)	Kr-85m	$1 \times 10^{-6}$	
	Kr-85		$3 \times 10^{-6}$
Lanthanum (57)	La-140		$2 \times 10^{-4}$
Lead (82)	Pb-203		$4 \times 10^{-3}$
Lutetium (71)	Lu-177		$1 \times 10^{-3}$
Manganese (25)	Mn-52		$3 \times 10^{-4}$
	Mn-54		$1 \times 10^{-3}$
	Mn-56		$1 \times 10^{-3}$
Mercury (80)	Hg-197m		$2 \times 10^{-3}$
	Hg-197		$3 \times 10^{-3}$

Element (atomic number)	Isotope	Column I Gas concentration $\mu\text{Ci/ml}^1$	Column II Liquid and solid concentration $\mu\text{Ci/ml}^2$
	Hg-203		$2 \times 10^{-4}$
Molybdenum (42)	Mo-99		$2 \times 10^{-3}$
Neodymium (60)	Nd-147		$6 \times 10^{-4}$
	Nd-149		$3 \times 10^{-3}$
Nickel (28)	Ni-65		$1 \times 10^{-3}$
Niobium (Columbium)(41)	Nb-95		$1 \times 10^{-3}$
	Nb-97		$9 \times 10^{-3}$
Osmium (76)	Os-185		$7 \times 10^{-4}$
	Os-191m		$3 \times 10^{-2}$
	Os-191		$2 \times 10^{-3}$
	Os-193		$6 \times 10^{-4}$
Palladium (46)	Pd-103		$3 \times 10^{-3}$
	Pd-109		$9 \times 10^{-4}$
Phosphorus (15)	P-32		$2 \times 10^{-4}$
Platinum (78)	Pt-191		$1 \times 10^{-3}$
	Pt-193m		$1 \times 10^{-2}$
	Pt-197m		$1 \times 10^{-2}$
	Pt-197		$1 \times 10^{-3}$
Potassium (19)	K-42		$3 \times 10^{-3}$
Praseodymium (59)	Pr-142		$3 \times 10^{-4}$
	Pr-143		$5 \times 10^{-4}$
Promethium (61)	Pm-147		$2 \times 10^{-3}$
	Pm-149		$4 \times 10^{-4}$
Radium (88)	Ra-226		$1 \times 10^{-7}$
	Ra-228		$3 \times 10^{-7}$
Rhenium (75)	Re-183		$6 \times 10^{-3}$
	Re-186		$9 \times 10^{-4}$
	Re-188		$6 \times 10^{-4}$
Rhodium (45)	Rh-103m		$1 \times 10^{-1}$
	Rh-105		$1 \times 10^{-3}$
Rubidium	Rb-86		$7 \times 10^{-4}$
Ruthenium (44)	Ru-97		$4 \times 10^{-3}$
	Ru-103		$8 \times 10^{-4}$
	Ru-105		$1 \times 10^{-3}$
	Ru-106		$1 \times 10^{-4}$
Samarium (62)	Sm-153		$8 \times 10^{-4}$
Scandium (21)	Sc-46		$4 \times 10^{-4}$
	Sc-47		$9 \times 10^{-4}$
	Sc-48		$3 \times 10^{-4}$
Selenium (34)	Se-75		$3 \times 10^{-3}$
Silicon (14)	Si-31		$9 \times 10^{-3}$
Silver (47)	Ag-105		$1 \times 10^{-3}$
	Ag-110m		$3 \times 10^{-4}$
	Ag-111		$4 \times 10^{-4}$
Sodium (11)	Na-24		$2 \times 10^{-3}$
Strontium (38)	Sr-85		$1 \times 10^{-3}$
	Sr-89		$1 \times 10^{-4}$
	Sr-91		$7 \times 10^{-4}$



Element (atomic number)	Isotope	Column I Gas concentration $\mu\text{Ci/ml}^1$	Column II Liquid and solid concentration $\mu\text{Ci/ml}^2$
	Sr-92		$7 \times 10^{-4}$
Sulfur (16)	S-35	$9 \times 10^{-8}$	$6 \times 10^{-4}$
Tantalum (73)	Ta-182		$4 \times 10^{-4}$
Technetium (43)	Tc-96m		$1 \times 10^{-1}$
	Tc-96		$1 \times 10^{-3}$
Tellurium (52)	Te-125m		$2 \times 10^{-3}$
	Te-127m		$6 \times 10^{-4}$
	Te-127		$3 \times 10^{-3}$
	Te-129m		$3 \times 10^{-4}$
	Te-131m		$6 \times 10^{-4}$
	Te-132		$3 \times 10^{-4}$
Terbium (65)	Tb-160		$4 \times 10^{-4}$
Thallium (81)	Tl-200		$4 \times 10^{-3}$
	Tl-201		$3 \times 10^{-3}$
	Tl-202		$1 \times 10^{-3}$
	Tl-204		$1 \times 10^{-3}$
Thulium (69)	Tm-170		$5 \times 10^{-4}$
	Tm-171		$5 \times 10^{-3}$
Tin (50)	Sn-113		$9 \times 10^{-4}$
	Sn-125		$2 \times 10^{-4}$
Tungsten (Wolfram) (74)	W-181		$4 \times 10^{-3}$
	W-187		$7 \times 10^{-4}$
Vanadium (23)	V-48		$3 \times 10^{-4}$
Xenon (54)	Xe-131m	$4 \times 10^{-6}$	
	Xe-133	$3 \times 10^{-6}$	
	Xe-135	$1 \times 10^{-6}$	
Ytterbium (70)	Yb-175		$1 \times 10^{-3}$
Yttrium (39)	Y-90		$2 \times 10^{-4}$
	Y-91m		$3 \times 10^{-2}$
	Y-91		$3 \times 10^{-4}$
	Y-92		$6 \times 10^{-4}$
	Y-93		$3 \times 10^{-4}$
Zinc (30)	Zn-65		$1 \times 10^{-3}$
	Zn-69m		$7 \times 10^{-4}$
	Zn-69		$2 \times 10^{-2}$
Zirconium (40)	Zr-95		$6 \times 10^{-4}$
	Zr-97		$2 \times 10^{-4}$

Beta and/or gamma emitting  
radioactive material not listed above  
with half-life less than 3 years

$1 \times 10^{-10}$	$1 \times 10^{-6}$
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Notes:

<sup>1</sup>Values are given in Column I only for those materials normally used as gases

<sup>2</sup> $\mu\text{Ci/gm}$  for solids

Note 1: Many radioisotopes disintegrate into isotopes which are also radioactive. In expressing the concentrations in Schedule C the activity stated is that of the parent isotope and takes into account the daughters.

Note 2: For purposes of WAC 246-232-010(((2))) (1) where there is involved a combination of isotopes, the limit for the

combination should be derived as follows: Determine for each isotope in the product the ratio between the concentration present in the product and the exempt concentration established in Schedule C for the specific isotope when not in combination. The sum of such ratios may not exceed "1" (i.e., unity).

Example:

$$\frac{\text{Concentration of Isotope A in Product}}{\text{Exempt concentration of Isotope A}} + \frac{\text{Concentration of Isotope B in Product}}{\text{Exempt concentration of Isotope B}} \leq 1$$

Note 3: For the purpose of determining concentration in a product or device, the total quantity of radioactive material present is divided by only that weight or volume of the discrete part or component throughout which the radioactive material is relatively uniformly distributed. If the weight or volume of this part or component cannot be determined then the product or device should be evaluated on the basis of the total quantity of radioactive material present.