

From: "Frazee, Terry" <Terry.Frazee@DOH.WA.GOV>
To: "Stephen Salomon" <SNS@nrc.gov>
Date: Thu, May 4, 2000 6:08 PM
Subject: FW: RATS 1995-5, 1997-5, 1998-4

Here is the original message sent 2/1/00. Let me know that it got through to you! Thanks!

"This message may be confidential. If you received it by mistake, please notify the sender and delete the message. All messages to and from the Department of Health may be disclosed to the public."

This message from Terry C. Frazee
e-mail terry.frazee@doh.wa.gov

Quick ways to reach me:
Voice = 360-236-3221
FAX = 360-236-2255

Also, visit our Home Page at
<http://www.doh.wa.gov/ehp/rp>

-----Original Message-----

From: Frazee, Terry
Sent: Tuesday, February 01, 2000 3:17 PM
To: NRC-FredCombs (E-mail)
Cc: Erickson, John; NRC-Dennis (E-mail); NRC-LindaMcLean (E-mail); NRC-MarkShaffer (E-mail)
Subject: RATS 1995-5, 1997-5, 1998-4

Attached are the proposed regulations to bring WA into compatibility with NRC on the following:

RATS 1995-5 (previously reviewed by NRC, letter dated July 26, 1999) -- WAC 246-221-020 is amended to remove wording that was of concern to NRC.

RATS 1995-7 -- WAC 246-220-010, 246-235-084, and many sections in chapter 246-243 have been amended or established to take care of the radiographer certification and 2 person rule.

RATS 1998-4 -- WAC 246-243-050 and 246-243-090 have been amended to accommodate clarifying amendments to the radiographer rule.

Sections of our proposed regulations that are being amended simply to correct cross references are not included (unless already in the same file as substantive amendments!)

In reviewing the radiography rules, please note that we have incorporated the Appendix A to 10 CFR 34 to clearly specify what is required for a "certifying entity"; however, we do not, at this time, intend to issue certificates ourselves. In the event that we would do so, the regulation

will already be in place.

Also, please note that in our definition of "radiographic operations" (WAC 246-243-020), we use the term of art "common or contract carrier" as found in US DOT regulations and in 10 CFR 71, rather than the term "common or contract transporter" which is not defined anywhere (that we know).

The official notice of this proposed rule change will appear in the February 16, 2000 issue of the Washington State Register. The public hearing will be held on March 9 in Seattle, WA. Any comments that you have must be received by us on or before that date in order to assure consideration in a timely manner.

Finally, you will note in WAC 246-243-130(1)(a) reference to a "list of recognized certifying entities". It would be most helpful if NRC could develop a master list on behalf of all radiation control programs, perhaps as a "web site". Please consider doing this.

"This message may be confidential. If you received it by mistake, please notify the sender and delete the message. All messages to and from the Department of Health may be disclosed to the public."

This message from Terry C. Frazee
e-mail terry.frazee@doh.wa.gov

Quick ways to reach me:
Voice = 360-236-3221
FAX = 360-236-2255

Also, visit our Home Page at
<http://www.doh.wa.gov/ehp/rp>

From: "Frazee, Terry" <Terry.Frazee@DOH.WA.GOV>
To: "Stephen Salomon" <SNS@nrc.gov>
Date: Thu, May 4, 2000 7:42 PM
Subject: RE: RE: Industrial Radiography Changes

Here is additional information you will need to review the compatibility of our IR regulations: the final regulations (to close out RATS 1997-5, 1998-4, and 1995-5) can be found as published in our State Register as WSR-00-08-013 (accessible on the internet directly at <http://slc.leg.wa.gov/wsr/register.htm> or through our home page, below). NO changes were made from the draft regulations which were originally sent to Fred Combs on February 1, 2000 and also forwarded to you earlier today. The effective date of the regulations is April 24, 2000. Certification will be required of all radiographers as of January 1, 2001. Please note: while our regulations specify the requirements for an independent certifying organization, we do not intend to be one ourselves (too few radiographer to warrant the expense). However, we have asked NRC to provide, at a minimum, a list of recognized certifying organizations. See Jim Myers for communications on this subject. If you have any questions, let me know!
Thanks!

"This message may be confidential. If you received it by mistake, please notify the sender and delete the message. All messages to and from the Department of Health may be disclosed to the public."

This message from Terry C. Frazee
e-mail terry.frazee@doh.wa.gov

Quick ways to reach me:
Voice = 360-236-3221
FAX = 360-236-2255

Also, visit our Home Page at
<http://www.doh.wa.gov/ehp/rp>

CC: "NRC-FredCombs (E-mail)" <fcc@nrc.gov>, "NRC-MYERS..."

Washington State Department of Health

 [access.washington](#)

[DOH Home](#)

[Radiation Home](#)

[Rules & Regs](#)

Division of Radiation Protection



Industrial Radiography Regulations

[Copyright/Disclaimer Statement](#)

Below is the current version of Chapter 246-243 WAC including new and amended sections as of April 24, 2000. While every effort is made to ensure accuracy, please note the "Copyright/Disclaimer" above!

■ The following changes are effective April 24, 2000.

- **WAC 246-243-020 Definitions.** New and amended definitions.
- **WAC 246-243-030 ((Offshore)) Conducting industrial radiography operations.** Requires two qualified radiographers at temporary job sites.
- **New WAC 246-243-042 Labeling, storage, and transportation.**
- **New WAC 246-243-044 Records of receipt and transfer of sealed sources.**
- **New WAC 246-243-047 Radiation safety officer for industrial radiography.**
- **WAC 246-243-050 Internal ((audit)) inspection program and training.** Inspecting radiographer job performance; frequency change.
- **WAC 246-243-060 Locking of radiographic exposure devices.** Removing keys when not under observation.
- **WAC 246-243-080 Radiation survey instruments.** Additional calibration specifications.
- **WAC 246-243-090 Leak testing, repair, tagging, opening, modification, and replacement of sealed sources.** Storage provision and testing for depleted uranium.
- **WAC 246-243-100 Quarterly inventory.** To include depleted uranium.
- **WAC 246-243-110 Utilization logs.** Information to

- be included.
- **WAC 246-243-120 Inspection and maintenance of radiographic exposure devices, ((control cables,)) transport and storage containers ((and)), associated equipment, source changers, and survey instruments.** Clarifies requirement.
 - **WAC 246-243-130 Limitations--Personal radiation safety requirements for radiographers and radiographers' assistants.** Requires certification and training.
 - **WAC 246-243-140 Operating and emergency procedures.** Clarifies content.
 - **New WAC 246-243-141 Copies of operating and emergency procedures.**
 - **WAC 246-243-150 Personnel monitoring control.** Actions to be taken if dosimeter is off-scale, lost or damaged.
 - **WAC 246-243-160 Supervision of radiographers' assistants.** Corrects terminology.
 - **WAC 246-243-170 Security--Precautionary procedures in radiographic operations.** Updates requirement.
 - **WAC 246-243-180 Posting.** Posting is always required!
 - **WAC 246-243-190 Radiation surveys and survey records.** Clarifies when surveys are required.
 - **WAC 246-243-195 Reporting.** Requires licensees report when about to exceed 180 days at a temporary job site.
 - **WAC 246-243-200 Records required at temporary job sites.** Clarifies what records are required.
 - **New WAC 246-243-203 Form of records.**
 - **WAC 246-243-210 Special requirements for enclosed radiography.** Repealed
 - **WAC 246-243-220 Special requirements for permanent radiographic installation.** Clarifies alarm system requirements.
 - **WAC 246-243-230 Appendix A--Minimum subjects to be covered in training radiographers.** Clarification.
 - **New WAC 246-243-250 Appendix C--Radiographer certification.**

WAC 246-243-001 Purpose.

The regulations in this chapter establish radiation safety requirements for persons utilizing sources of radiation for industrial radiography. The requirements of this part are

in addition to and not in substitution for the other requirements of these regulations.

[Statutory Authority: RCW 43.70.040. 91-02-049 (Order 121), recodified as § 246-243-001, filed 12/27/90, effective 1/31/91; Order 1084, § 402-36-010, filed 1/14/76; Order 1, § 402-36-010, filed 1/8/69; Rules (part), filed 10/26/66.]

WAC 246-243-010 Scope.

The regulations in this chapter apply to all licensees who use sources of radiation for industrial radiography: Provided, however, That nothing in this part shall apply to the use of sources of radiation in the healing arts.

[Statutory Authority: RCW 70.98.050. 94-01-073, § 246-243-010, filed 12/9/93, effective 1/9/94. Statutory Authority: RCW 43.70.040. 91-02-049 (Order 121), recodified as § 246-243-010, filed 12/27/90, effective 1/31/91; Order 1084, § 402-36-020, filed 1/14/76; Order 1, § 402-36-020, filed 1/8/69; Rules (part), filed 10/26/66.]

WAC 246-243-020 Definitions. As used in this part:

(1) "Annual refresher safety training" means a review conducted or provided by the licensee for its employees on radiation safety aspects of industrial radiography. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, new or revised regulations, accidents or errors that have been observed, and should also provide opportunities for employees to ask safety questions.

(2) "Associated equipment" means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drives, guides, or comes in contact with the source, (e.g., guide tube, control tube, control (drive) cable, removable source stop, "J" tube and collimator) when it is used as an exposure head.

(3) "Certifying entity" means an independent certifying organization meeting the requirements in WAC 246-243-250 Appendix C or an agreement state meeting the requirements in WAC 246-243-250 Appendix C, subsections (2) and (3).

(4) "Collimator" means a radiation shield that is placed on the end of the guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure.

(5) "Control (drive) cable" means the cable that is connected to the source assembly and used to drive the source to and from the exposure location.

(6) "Control drive mechanism" means a device that enables the source assembly to be moved to and from the exposure device.

(7) "Control tube" means a protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device.

(8) "Exposure head" means a device that locates the gamma radiography sealed source in the selected working position. (An exposure head is also known as a source stop.)

(9) "Field station" means a facility where licensed material may be stored or used and from which equipment is dispatched.

(10) "Guide tube (projection sheath)" means a flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the exposure device to the exposure head. The guide tube may also include the connections necessary for attachment to the exposure device and to the exposure head.

(11) "Hands-on experience" means experience in all of those areas considered to be directly involved in the radiography process.

(12) "Independent certifying organization" means an independent organization that meets all of the criteria of WAC 246-243-250 Appendix C.

(13) "Industrial radiography" (radiography) means the examination of the macroscopic structure of materials by nondestructive methods utilizing sources of radiation to make radiographic images. Industrial radiography as used in this chapter does not include well logging operations.

(14) "Lay-barge radiography" means industrial

radiography performed on any water vessel used for laying pipe.

(15) "Offshore platform radiography" means industrial radiography conducted from a platform over a body of water.

(16) "Permanent radiographic installation" means an enclosed shielded room, cell or vault, not located at a temporary job site, in which radiography is performed, regardless of ownership.

(17) "Practical examination" means a demonstration through practical application of the safety rules and principles in industrial radiography including use of all appropriate equipment and procedures.

(18) "Radiation safety officer for industrial radiography" means an individual with the responsibility for the overall radiation safety program on behalf of the licensee and who meets the requirements of WAC 246-243-047.

(19) "Radiographer" means any individual who performs or who, in attendance at the site where sources of radiation are being used, personally supervises industrial radiographic operations and who is responsible to the licensee for assuring compliance with the requirements of these regulations and all license conditions.

(20) "Radiographer certification" means written approval received from a certifying entity stating that an individual has satisfactorily met certain established radiation safety, testing, and experience criteria.

(21) "Radiographer's assistant" means any individual who, under the personal supervision of a radiographer, uses sources of radiation, related handling tools, or radiation survey instruments in industrial radiography.

(22) "Radiographic exposure device" means any instrument containing a sealed source fastened or contained therein, in which the sealed source or shielding thereof may be moved, or otherwise changed, from a shielded to unshielded position for purposes of making a radiographic exposure.

(23) "Radiographic operations" means all activities associated with the presence of radioactive sources in a radiographic exposure device during use of the device or transport (except when being transported by a common or contract carrier), to include surveys to confirm the

adequacy of boundaries, setting up equipment and any activity inside restricted area boundaries.

(24) "S-tube" means a tube through which the radioactive source travels when inside a radiographic exposure device.

(25) "Shielded position" means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement.

(26) "Source assembly" means an assembly that consists of the sealed source and a connector that attaches the source to the control cable. The source assembly may also include a stop ball used to secure the source in the shielded position.

(27) "Source changer" means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those also used for transporting and storage of sealed sources.

(28) "Storage area" means any location, facility, or vehicle which is used to store or to secure a radiographic exposure device, a storage container, or a sealed source when it is not in use and which is locked or has a physical barrier to prevent accidental exposure, tampering with, or unauthorized removal of the device, container, or source.

(29) "Storage container" means a container in which sealed sources are secured and stored.

(30) "Temporary job site" means a location where radiographic operations are conducted and where licensed material may be stored other than those location(s) of use authorized on the license.

(31) "Underwater radiography" means industrial radiography performed when the radiographic exposure device and/or related equipment are beneath the surface of the water.

WAC 246-243-030 Conducting industrial radiography operations. (1) Whenever radiography is performed at a location other than a permanent radiographic installation, the radiographer must be accompanied by at least one other qualified radiographer or an individual who has at a minimum met the requirements of WAC 246-243-130(2)

(radiographer's assistant). The additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one qualified individual is present.

(2) All radiographic operations conducted at locations of use authorized on the license must be conducted in a permanent radiographic installation, unless specifically authorized by the department.

(3) Offshore platform, lay-barge, and/or underwater radiography shall be performed only by licensees whose license specifically authorizes such activity. Such operations fall under the jurisdiction of the United States Nuclear Regulatory Commission when conducted outside of the territorial waters of the state of Washington.

(4) Licensees will have until January 1, 2001, to meet the requirement for having two qualified individuals present at locations other than a permanent radiographic installation as specified in subsection (1) of this section.

WAC 246-243-040 Equipment performance requirements.

Equipment used in industrial radiography operations must meet the following minimum criteria:

(1)(a) Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in American National Standards Institute, N432-1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552 (a) and 1 CFR part 51. This publication may be purchased from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018 Telephone (212) 642-4900. Copies of the document are available for inspection at the Department of Health, Division of Radiation Protection, Olympia, Washington.

(b) Engineering analysis may be submitted by an applicant or licensee to demonstrate the applicability of previously performed testing on similar individual radiography equipment components. Upon review, the

department may find this an acceptable alternative to actual testing of the component pursuant to the above referenced standard.

(c) Notwithstanding (a) of this subsection, equipment used in industrial radiographic operations need not comply with Section 8.9.2(c) of the Endurance Test in American National Standards Institute N432-1980, if the prototype equipment has been tested using a torque value representative of the torque that an individual using the radiography equipment can realistically exert on the lever or crankshaft of the drive mechanism.

(2) In addition to the requirements specified in subsection (1) of this section, the following requirements apply to radiographic exposure devices, source changers, source assemblies and sealed sources.

(a) The licensee shall ensure that each radiographic exposure device has attached to it a durable, legible, clearly visible label bearing the:

(i) Chemical symbol and mass number of the radionuclide in the device;

(ii) Activity and the date on which this activity was last measured;

(iii) Model (or product code) and serial number of the sealed source;

(iv) Manufacturer's identity of the sealed source; and

(v) Licensee's name, address, and telephone number.

(b) Radiographic exposure devices intended for use as Type B transport containers must meet the applicable requirements of 10 CFR part 71.

(c) Modification of radiographic exposure devices, source changers, and source assemblies and associated equipment is prohibited, unless the design of any replacement component, including source holder, source assembly, controls or guide tubes would not compromise the design safety features of the system.

(3) In addition to the requirements specified in subsections (1) and (2) of this section, the following requirements apply to radiographic exposure devices, source assemblies, and associated equipment that allow the source to be moved out of the device for radiographic

operations or to source changers.

(a) The coupling between the source assembly and the control cable must be designed in such a manner that the source assembly will not become disconnected if cranked outside the guide tube. The coupling must be such that it can not be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions.

(b) The device must automatically secure the source assembly when it is cranked back into the fully shielded position within the device. The securing system may only be released by means of a deliberate operation on the exposure device.

(c) The outlet fittings, lock box, and drive cable fitting on each radiographic exposure device must be equipped with safety plugs or covers which must be installed during storage and transportation to protect the source assembly from water, mud, sand, or other foreign matter.

(d) (i) Each sealed source or source assembly must have attached to it or engraved on it, a durable, legible, visible label with the words: "DANGER--RADIOACTIVE."

(ii) The label may not interfere with the safe operation of the exposure device or associated equipment.

(e) The guide tube must be able to withstand a crushing test that closely approximates the crushing forces that are likely to be encountered during use, and be able to withstand a kinking resistance test that closely approximates the kinking forces likely to be encountered during use.

(f) Guide tubes must be used when moving the source out of the device.

(g) An exposure head or similar device designed to prevent the source assembly from passing out of the end of the guide tube must be attached to the outermost end of the guide tube during radiographic operations.

(h) The guide tube exposure head connection must be able to withstand the tensile test for control units specified in ANSI N432-1980.

(i) Source changers must provide a system for ensuring that the source will not be accidentally withdrawn from the changer when connecting or disconnecting the drive cable to or from a source assembly.

(4) All radiographic exposure devices and associated equipment in use after January 1, 1998, must comply with the requirements of this section.

(5) The maximum exposure rate limits for storage containers and source changers with the sealed source in the shielded position are:

(a) 2 millisieverts (200 millirem) per hour at any exterior surface; and

(b) 0.1 millisieverts (10 millirem) per hour at one meter from any exterior surface.

NEW SECTION

WAC 246-243-042 Labeling, storage, and transportation. (1) The licensee may not use a source changer or a container to store licensed material unless the source changer or the storage container has securely attached to it a durable, legible, and clearly visible label bearing the standard trefoil radiation caution symbol in conventional colors, i.e., magenta, purple or black on a yellow background, having a minimum diameter of 25 mm, and the wording:

caution (or "danger")

radioactive material

notify civil authorities

(or "name of company")

(2) The licensee may not transport licensed material unless the material is packaged, and the package is labeled, marked, and accompanied with appropriate shipping papers in accordance with regulations set out in 10 CFR Part 71.

(3) Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering or removal by unauthorized personnel. The licensee shall store licensed material in a manner which

will minimize danger from explosion or fire.

(4) The licensee shall lock and physically secure the transport package containing licensed material in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

NEW SECTION

WAC 246-243-044 Records of receipt and transfer of sealed sources. (1) Each licensee shall maintain records showing the receipts and transfers of sealed sources and of devices using depleted uranium (DU) for shielding and retain each record for three years after it is made.

(2) These records must include the date, shipper or destination, the name of the individual making the record, radionuclide, number of becquerels (curies) or mass (for DU), and manufacturer, model, and serial number of each sealed source and/or device, as appropriate.

NEW SECTION

WAC 246-243-047 Radiation safety officer for industrial radiography. The radiation safety officer (RSO) shall ensure that radiation safety activities are being performed in accordance with approved procedures and regulatory requirements in the daily operation of the licensee's program.

(1) The minimum qualifications, training, and experience for RSOs for industrial radiography are as follows:

(a) Completion of the training and testing requirements of WAC 246-243-130(1);

(b) Two thousand hours of hands-on experience as a qualified radiographer in industrial radiographic operations utilizing sealed radioactive material; and

(c) Formal training in the establishment and maintenance of a radiation protection program.

(2) The department will consider alternatives when the RSO has appropriate training and/or experience in the field of ionizing radiation, and in addition, has adequate

formal training with respect to the establishment and maintenance of a radiation safety protection program.

(3) The specific duties and authorities of the RSO include, but are not limited to:

(a) Establishing and overseeing all operating, emergency, and ALARA procedures as required by chapter 246-221 WAC, and reviewing them regularly to ensure that the procedures in use conform to current chapter 246-221 WAC requirements, conform to other department regulations and to the license conditions;

(b) Overseeing and approving all phases of the training program for radiographic personnel, ensuring that appropriate and effective radiation protection practices are taught;

(c) Ensuring that required radiation surveys and leak tests are performed and documented in accordance with the regulations, including any corrective measures when levels of radiation exceed established limits;

(d) Ensuring that personnel monitoring devices are calibrated and used properly by occupationally exposed personnel, that records are kept of the monitoring results, and that timely notifications are made as required by WAC 246-221-260; and

(e) Ensuring that operations are conducted safely and to assume control for instituting corrective actions including stopping of operations when necessary.

(4) The licensee will have until January 1, 2001, to meet the requirements of subsection (1) or (2) of this section.

WAC 246-243-050 Internal inspection program and training.

(1) Each licensee shall conduct the internal inspection of job performance required by WAC 246-235-084 at intervals not to exceed six months.

Except as provided in subsection (1)(d) of this section, the radiation safety officer (RSO) or designee shall conduct an inspection program of the job performance of each radiographer and radiographer's assistant to ensure that the department's regulations, license requirements, and the licensee's operating and emergency procedures

are followed. The inspection program shall:

(a) Include observation of the performance of each radiographer and radiographer's assistant during an actual industrial radiographic operation, at intervals not to exceed six months; and

(b) Provide that, if a radiographer or a radiographer's assistant has not participated in an industrial radiographic operation for more than six months since the last inspection, the radiographer must demonstrate knowledge of the training requirements of WAC 246-243-130 (1)(c) and the radiographer's assistant must redemonstrate knowledge of the training requirements of WAC 246-243-130(2)(b) by a practical examination before these individuals can next participate in a radiographic operation.

(c) The department may consider alternatives in situations where the individual serves as both radiographer and RSO.

(d) In operations where a single individual serves as both radiographer and RSO, and performs all radiography operations, an inspection program is not required.

(2) The licensee shall provide annual refresher safety training for each radiographer and radiographer's assistant at intervals not to exceed twelve months.

(3) Each licensee shall maintain the following records for three years after the record is made:

(a) For semi-annual inspection of job performance, the record shall include:

(i) A list of the items checked; and

(ii) Any noncompliances observed by the RSO;

(b) For annual refresher safety training, the record shall include:

(i) A list of the topics discussed;

(ii) The dates the training was conducted; and

(iii) Names of the instructors and attendees.

WAC 246-243-060 Locking of radiographic exposure devices. (1) Each radiographic exposure device shall be provided with a lock or outerlocked container designed to prevent unauthorized or accidental production of radiation or removal or exposure of a sealed source and shall be locked when returned to the shielded position at all times. If it is a keyed-lock, the key shall be removed at all times when not under the direct surveillance of a radiographer or a radiographer's assistant except at permanent radiographic installations as stated in WAC 246-243-170. In addition, during radiographic operations the sealed source assembly shall be locked in the shielded position each time the source is returned to that position.

(2) Each sealed source storage container and source changer shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers shall be kept locked (and if a keyed-lock, with the key removed at all times) when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

(3) Radiographic exposure devices, source changers, and storage containers, prior to being moved from one location to another and also prior to being secured at a given location, shall be locked and surveyed to assure that the sealed source is in the shielded position.

WAC 246-243-070 Storage precautions.

(1) Locked radiographic exposure devices and storage containers shall be physically secured to prevent tampering or removal by unauthorized personnel.
(2) At least one calibrated and operable radiation survey instrument shall be available at the storage area whenever a radiographic exposure device, a storage container, or source is being placed in storage.

[Statutory Authority: RCW 70.98.050. 94-01-073, § 246-243-070, filed 12/9/93, effective 1/9/94. Statutory Authority: RCW 43.70.040. 91-02-049 (Order 121), recodified as § 246-243-070, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.050. 81-01-011 (Order 1570), § 402-36-050, filed 12/8/80; Order 1084, § 402-36-050, filed 1/14/76; Order 1, § 402-36-050, filed 1/8/69; Rules (part), filed 10/26/66.]

WAC 246-243-080 Radiation survey instruments. (1)

The licensee shall maintain sufficient calibrated and operable radiation survey instruments at each location where radioactive material is present to make physical radiation surveys as required by this part and chapter 246-221 WAC. Instrumentation required by this section shall be capable of measuring a range from 0.02 millisieverts (2 millirems) per hour through 0.01 sievert (1 rem) per hour.

(2) Each radiation survey instrument shall be calibrated:

(a) At intervals not to exceed six months and after each instrument servicing except for battery changes;

(b) Such that accuracy within ± 20 percent of the calibration source can be demonstrated at each point checked; and

(c) For linear scale instruments, at two points located approximately one-third and two-thirds of full scale on each scale; for logarithmic scale instruments, at mid-range of each decade; and for digital instruments at three points between 0.02 and 10 millisieverts (2 and 1000 millirems) per hour.

(3) Records shall be maintained of these calibrations for three years after the calibration date for inspection by the department.

WAC 246-243-090 Leak testing, repair, tagging, opening, modification, and replacement of sealed sources. (1)

The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing, repair, tagging, opening, or any other modification of any sealed source shall be performed only by persons specifically authorized to do so by the department, the United States Nuclear Regulatory Commission, or any agreement state.

(2) Each sealed source shall be tested for leakage at intervals not to exceed six months. Sealed sources that are in storage and not in use do not require leak testing, but must be tested before use or transfer to another person if the interval of storage exceeds six months. In the absence of a certificate from a transferor that a test has been made within the six-month period prior to the transfer, the sealed source shall not be put into use until

tested and results obtained.

(3) The leak test shall be capable of detecting the presence of 185 becquerels (0.005 microcurie) of removable contamination on the sealed source. An acceptable leak test for sealed sources in the possession of a radiography licensee would be to test at the nearest accessible point to the sealed source storage position, or other appropriate measuring point where contamination might accumulate, by a procedure specifically approved in a license condition. Records of leak test results shall be kept in units of becquerels (microcuries) and maintained for inspection by the department for three years after the leak test is performed.

(4) Any test conducted under subsections (2) and (3) of this section which reveals the presence of 185 becquerels (0.005 microcurie) or more of removable radioactive material shall be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved from use and shall cause it to be decontaminated and repaired or to be disposed in accordance with regulations of the department. Within five days after obtaining results of the test, the licensee shall file a report with the department describing the involved equipment, the test results, and the corrective action taken.

(5) Each exposure device using depleted uranium (DU) shielding and an "S" tube configuration must be tested for DU contamination at intervals not to exceed twelve months. The analysis must be capable of detecting the presence of 185 becquerels (0.005 microcuries) of radioactive material on the test sample and must be performed by a person specifically authorized by the department, the United States Nuclear Regulatory Commission or an agreement state to perform the analysis. If testing reveals the presence of 185 becquerels (0.005 microcuries) or more of removable DU contamination, the exposure device must be removed from use until an evaluation of the wear on the S-tube has been made. If the evaluation reveals that the S-tube is worn through, the device may not be used again. DU shielded devices do not have to be tested for DU contamination while in storage and not in use. Before using or transferring such a device however, the device must be tested for DU contamination if the interval of storage exceeded twelve months. A record of the DU leak-test results shall be kept in units of becquerels (microcuries) and maintained for inspection by the department for three years after the DU leak test is made

or until the source in storage is removed. Licensees will have until January 1, 2001, to comply with the DU leak testing requirements of this section.

WAC 246-243-100 Quarterly inventory. Each licensee shall conduct a quarterly physical inventory to account for all sealed sources and for devices containing depleted uranium (DU) received or possessed. The records of the inventories shall be maintained for three years from the date of inventory for inspection by the department and shall include:

- (1) Exposure device or source changer make, model, and serial number;
 - (2) Sealed source serial number and manufacturer;
 - (3) Radionuclide and current activity in becquerels (curies) or mass (for DU) in each device;
 - (4) Location of sealed source and/or device/changer;
 - (5) Date of inventory;
 - (6) Name of person who performed inventory.
-

WAC 246-243-110 Utilization logs. (1) Each licensee shall maintain current logs, which shall be kept available for inspection by the department for three years from the date of the recorded event, at the address specified in the license showing for each sealed source and radiation exposure device the following information:

- (a) A description including the make, model and serial number) of each radiation exposure device or transport or storage container in which the sealed source is located;
- (b) The identity and signature of the radiographer to whom assigned; and
- (c) Locations where used and dates of use including the dates removed and returned to storage.

(2) A separately identified utilization log is not required if the equivalent information is available in records of the licensee and available at the address specified in the license.

WAC 246-243-120 Inspection and maintenance of radiographic exposure devices, transport and storage containers associated equipment, source changers, and survey instruments. (1) The licensee shall perform visual and operability checks on survey meters, radiographic exposure devices, transport and storage containers, associated equipment and source changers before use on each day the equipment is to be used to ensure that the equipment is in good working condition, that the sources are adequately shielded, and that required labeling is present. Survey instrument operability must be performed using check sources or other appropriate means. If equipment problems are found, the equipment must be removed from service until repaired.

(2) Each licensee shall have written procedures for:

(a) Inspection and routine maintenance of radiographic exposure devices, source changers, associated equipment, transport and storage containers, and survey instruments at intervals not to exceed three months or before the first use thereafter to ensure the proper functioning of components important to safety. Replacement components shall meet design specifications. If equipment problems are found, the equipment must be removed from service until repaired.

(b) Inspection and maintenance necessary to maintain the Type B packaging used to transport radioactive materials. The inspection and maintenance program must include procedures to assure that Type B packages are shipped and maintained in accordance with the certificate of compliance or other approval.

(3) Any maintenance performed on radiographic exposure devices and accessories shall be in accordance with the manufacturer's specifications.

(4) Records of daily checks and quarterly inspections including any equipment problems identified and of any maintenance performed under subsections (1) and (2) of this section shall be made and retained for three years. The record shall include:

(a) The date of check or inspection;

(b) Name of inspector;

- (c) Equipment involved;
 - (d) Any problems found; and
 - (e) What repair and/or maintenance, if any, was done.
-

WAC 246-243-130 Limitations--Personal radiation safety requirements for radiographers and radiographers' assistants. (1) No licensee shall permit any individual to act as a radiographer as defined in this chapter until such individual:

(a) Has been instructed in the subjects outlined in WAC 246-243-230, in addition to a minimum of two months of on-the-job training, and is certified through a radiographer certification program by a certifying entity in accordance with the criteria specified in WAC 246-243-250, Appendix C or equivalent regulations of the United States Nuclear Regulatory Commission or an agreement state. The department maintains a list of recognized certifying entities for reference. The licensee may, until January 1, 2001, allow an individual who has not met the requirement of this subsection, to act as a radiographer after the individual has received training in the subjects outlined in WAC 246-243-230 and demonstrated an understanding of these subjects by successful completion of a written examination that was previously submitted to and approved by the department;

(b) Has received copies of and instruction in the regulations contained in chapters 246-220, 246-221, 246-222, 246-231, and 246-243 WAC, in the United States Department of Transportation regulations as referenced in chapter 246-231 WAC, and the applicable sections of appropriate license(s), and the licensee's operating and emergency procedures, and shall have demonstrated understanding thereof by successful completion of a written or oral examination covering this material;

(c) Has received training in the use of the licensee's radiographic exposure devices, sealed sources, in the daily inspection of devices and associated equipment, and in the use of radiation survey instruments; and

(d) Has demonstrated understanding of the use of radiographic exposure devices, sources, survey instruments and associated equipment described in

subsection (1)(c) of this section by successful completion of a practical examination on the subjects covered.

(2) No licensee shall permit any individual to act as a radiographer's assistant as defined in this chapter until such individual:

(a) Has received copies of and instruction in the regulations contained in chapters 246-220, 246-221, 246-222, 246-231, and 246-243 WAC, in the United States Department of Transportation regulations as referenced in chapter 246-231 WAC, and the applicable sections of appropriate license(s), and the licensee's operating and emergency procedures;

(b) Has developed competence to use under the personal supervision of the radiographer the radiographic exposure devices, sealed sources, associated equipment, and radiation survey instruments which will be employed in the individual's assignment; and

(c) Has demonstrated understanding of the instructions provided under (a) of this subsection by successfully completing a written test on the subjects covered and has demonstrated competence in the use of the hardware described in (b) of this subsection by successful completion of a practical examination on the use of such hardware.

(3) Each licensee shall maintain, for inspection by the department, records of training and certification which demonstrate that the requirements of subsections (1) and (2) of this section are met. These records shall be maintained for three years after the record is made. The record shall include:

(a) Radiographer certification documents and verification of certification status;

(b) Copies of written tests;

(c) Dates of oral and practical examinations; and

(d) Names of individuals conducting and receiving the oral and practical examinations.

(4) Licensees will have until January 1, 2001, to comply with the certification requirements specified in subsection (1)(a) of this section, and the additional training requirements specified in subsections (1)(b) and (2)(a) of this section.

WAC 246-243-140 Operating and emergency procedures. The licensee's operating and emergency procedures shall include instructions in at least the following:

- (1) The handling and use of sources of radiation to be employed such that no individual is likely to be exposed to radiation doses in excess of the limits established in chapter 246-221 WAC Standards for protection against radiation;
- (2) Methods and occasions for conducting radiation surveys;
- (3) Methods for controlling access to radiographic areas;
- (4) Methods and occasions for locking and securing sources of radiation including radiographic exposure devices, transport and storage containers, and sealed sources;
- (5) Personnel monitoring and the use of personnel monitoring equipment including steps that must be taken immediately by radiography personnel if a pocket dosimeter is found to be off-scale or an alarm rate meter alarms unexpectedly;
- (6) Transportation to field locations, including packing of sources of radiation in the vehicles, placarding of vehicles when needed, and control of sources of radiation during transportation;
- (7) Minimizing exposure of individuals in the event of an accident;
- (8) Notifying proper personnel in the event of a theft, loss, overexposure or accident involving sources of radiation;
- (9) Maintenance of records;
- (10) The inspection, maintenance, and operability checks of radiographic exposure devices, survey instruments, transport containers, and storage containers;
- (11) Identifying and reporting defects and noncompliance as required by these regulations; and
- (12) Source recovery procedures if the licensee will

perform source recovery.

NEW SECTION

WAC 246-243-141 Copies of operating and emergency procedures. Each licensee shall maintain a copy of current operating and emergency procedures until the department terminates the license. Superseded material shall be retained for three years after the change is approved.

WAC 246-243-150 Personnel monitoring control. (1) No licensee shall permit any individual to act as a radiographer or as a radiographer's assistant unless, at all times during radiographic operations, each such individual shall wear on the trunk of the body a combination of an approved personnel dosimeter such as a film or TLD badge, a direct reading pocket dosimeter, and an alarming rate meter. In permanent facilities where other appropriate alarming or warning devices are in routine use, the wearing of an alarming rate meter is not required.

(a) Pocket dosimeters shall be capable of measuring exposures from zero to at least 200 milliroentgens. Electronic personal dosimeters may only be used in place of ion-chamber pocket dosimeters.

(b) A film or TLD badge or other approved personnel dosimeter shall be assigned to and worn by only one individual.

(c) Film badges must be replaced at periods not to exceed one month and TLDs must be replaced at periods not to exceed three months.

(d) After replacement, each film badge or TLD must be processed as soon as possible.

(2)(a) Direct reading dosimeters such as pocket dosimeters or electronic personal dosimeters shall be read and exposures recorded at the beginning and end of each shift. Pocket dosimeters shall be charged at the beginning of each shift. Pocket dosimeters shall be checked annually at periods not to exceed twelve months for correct response to radiation. Acceptable dosimeters shall read within plus or minus twenty percent of the true

radiation exposure.

(b) Each alarming rate meter must:

(i) Be checked to ensure that the alarm functions properly (sounds) prior to use at the start of each shift;

(ii) Be set to give an alarm signal at a maximum preset rate of 5 mSv/hr. (500 mR/hr.);

(iii) Require special means to change the preset alarm functions; and

(iv) Be calibrated annually at periods not to exceed twelve months for correct response to radiation: Acceptable rate meters must alarm within plus or minus twenty percent of the true radiation exposure rate.

(3) If an individual's pocket dosimeter is found to be off-scale, or if his or her electronic personal dosimeter reads greater than 2 millisieverts (200 millirems), and the possibility of radiation exposure cannot be ruled out as the cause, the individual's film badge or TLD must be sent for processing within twenty-four hours. In addition, the individual may not resume work associated with licensed material use until a determination of the individual's radiation exposure has been made. This determination shall be made by the RSO or the RSO's designee.

(4) If a film badge or TLD is lost or damaged, the worker shall cease work immediately until a replacement film badge or TLD is provided and the exposure is calculated for the time period from issuance to loss or damage of the film badge or TLD.

(5) Each licensee shall maintain the following exposure records:

(a) Direct reading dosimeter readings and yearly operability checks required by subsection (2) of this section for three years after the record is made.

(b) Records of alarm rate meter calibrations for three years after the record is made.

(c) Reports received from the film badge or TLD processor until the department terminates the licensee.

(d) Records of estimates of exposures as a result of: Off-scale personal direct reading dosimeters, or lost or

damaged film badges or TLDs, until the department terminates the license.

WAC 246-243-160 Supervision of radiographers' assistants. Whenever a radiographer's assistant uses radiographic exposure devices, uses sealed sources or associated equipment, or conducts radiation surveys required by WAC 246-243-190 to determine that the sealed source has returned to the shielded position after an exposure, he or she shall be under the personal supervision of a radiographer, as defined in WAC 246-243-020. Personal supervision shall include (1) the radiographer's personal presence at the site where the sealed sources are being used, (2) the ability of the radiographer to communicate and give immediate assistance if required, and (3) the radiographer's ability to observe the performance of his/her assistant during the operations referred to in this section.

WAC 246-243-170 Security--Precautionary procedures in radiographic operations. (1) During each radiographic operation, the radiographer or radiographer's assistant shall maintain continuous direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in chapter 246-220 WAC except:

At permanent radiographic installations where all entryways are locked and the requirements of WAC 246-243-220 are met.

(2) When not in operation or when not under direct surveillance, portable radiation exposure devices shall be physically secured to prevent removal by unauthorized personnel.

WAC 246-243-180 Posting. All areas in which industrial radiography is being performed shall be conspicuously posted as required by WAC 246-221-120. Exceptions listed in WAC 246-221-130 do not apply to industrial radiographic operations.

WAC 246-243-190 Radiation surveys and survey

records.

The licensee shall:

(1) Conduct surveys with a calibrated and operable radiation survey instrument that meets the requirements of WAC 246-243-080.

(2) Using a survey instrument meeting the requirements of subsection (1) of this section, conduct a survey of the radiographic exposure device and the guide tube after each exposure when approaching the device or the guide tube. The survey shall determine that the sealed source has returned to its shielded position before exchanging films, repositioning the exposure head, or dismantling equipment.

(3) Conduct a survey of the radiographic exposure device with a calibrated radiation survey instrument any time the source is exchanged and whenever a radiographic exposure device is placed in a storage area to ensure that the sealed source is in its shielded position.

(4) Conduct a physical radiation survey of the boundary of the restricted area during radiographic operations not employing shielded room radiography. The maximum survey reading at the boundary shall be recorded. The records shall indicate approximate distance from source to boundaries, whether or not the exposed source is collimated and any occupied areas with exposure levels greater than 2 mR in any hour during radiographic operations.

(5) Maintain a record of each exposure device survey conducted before the device is placed in storage if that survey is the last one performed in the workday, and records required by subsection (4) of this section, including the model and serial number of the survey meter used, for inspection by the department for three years after completion of the survey. If the survey was used to determine an individual's exposure, however, the records of the survey shall be maintained until the department authorizes their disposition.

WAC 246-243-195 Reporting. (1) In addition to the reporting requirements specified in other sections of the regulations, each licensee shall provide a written report to the department within thirty days of the occurrence of any of the following incidents involving radiographic

equipment:

(a) Unintentional disconnection of the source assembly from the control cable.

(b) Inability to retract the source assembly to its fully shielded position and secure it in this position.

(c) Failure of any component (critical to safe operation of the device) to properly perform its intended function.

(2) The licensee shall include the following information in each report submitted under subsection (1) of the section.

(a) A description of the equipment problem;

(b) Cause of each incident, if known;

(c) Manufacturer and model number of equipment involved in the incident;

(d) Place, time, and date of incident;

(e) Actions taken to reestablish normal operations;

(f) Corrective actions taken or planned to prevent recurrence;

(g) Qualifications of personnel involved in the incident.

(3) Reports of overexposure submitted under WAC 246-221-260 which involve failure of safety components of radiographic equipment must also include the information specified in subsection (2) of this section.

(4) Any licensee conducting radiographic operations or storing radioactive material at any location not listed on the license for a period in excess of one hundred eighty days in a calendar year, shall notify the department prior to exceeding the one hundred eighty days.

WAC 246-243-200 Records required at temporary job sites. Each licensee conducting radiographic operations at a temporary site shall have copies of the following documents and records available at that site for inspection by the department:

(1) Appropriate license;

- (2) Operating and emergency procedures;
- (3) Applicable regulations;
- (4) Survey records required pursuant to WAC 246-243-190 for the period of operation at the site;
- (5) Direct reading dosimeter records for the period of operation at the site;
- (6) The latest radiation survey instrument calibration record and leak test record for specific devices in use at the site;
- (7) The latest calibration record for alarm rate meters and operability checks of pocket dosimeters and/or electronic personal dosimeters as required by WAC 246-243-150;
- (8) Utilization records for each radiographic exposure device dispatched from that location as required by WAC 246-243-110;
- (9) Records of equipment problems identified in daily checks of equipment as required by WAC 246-243-120;
- (10) Records of alarm system and entrance control checks required by WAC 246-243-220, if applicable;
- (11) The shipping papers for the transportation of radioactive materials; and
- (12) When operating under reciprocity pursuant to WAC 246-232-040, a copy of the NRC or agreement state license authorizing the use of radioactive material.

NEW SECTION

WAC 246-243-203 Form of records. Each record required by this chapter must be legible throughout the specified retention period. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of reproducing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and

specifications, must include all pertinent information, such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

WAC 246-243-205 Temporary job site notification.

(1) Each licensee shall provide notification to the department as required by the department, preferably twenty-four hours but no later than two hours, prior to beginning radiographic operations at a temporary job site. The notification will be given by using the prescribed 1-800 telephone notification system. The notification shall include:

- (a) Name and office telephone number of the licensee;
- (b) Radioactive materials license number;
- (c) Address or directions to the temporary job site;
- (d) Specific date(s), time(s), and duration of expected radiographic operations;
- (e) Names of radiographers and, if applicable, radiographer assistants taking part in the radiographic operations; and
- (f) Name and telephone number of a contact person at the temporary job site.

(2) In the event that operations at a temporary job site continue for longer than thirty days, the licensee will renotify the department, as required by subsection (1) of this section, each succeeding month.

[Statutory Authority: RCW 70.98.050. 94-01-073, § 246-243-205, filed 12/9/93, effective 1/9/94.]

WAC 246-243-210 Special requirements for enclosed radiography.[repealed -- no longer applicable since x-ray requirements moved to separate chapter 246-227 WAC]

WAC 246-243-220 Special requirements for permanent radiographic installation.

(1) Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation to which this section applies shall have either:

- (a) An entrance control of the type described in WAC 246-221-102(1) that reduces the radiation level upon

entry into the area; or

(b) Both conspicuous visible and audible warning signals to warn of the presence of radiation. The visible signal shall be actuated by radiation whenever the source is exposed. The audible signal shall be actuated when an attempt is made to enter the installation while the source is exposed.

(2) The alarm system must be tested for proper operation with a radiation source each day before the installation is used for radiographic operations. The test must include a check of both the visible and audible signals. Entrance control devices that reduce the radiation level upon entry (designated in subsection (1)(a) of this section) shall be tested monthly. If an entrance control device or an alarm is operating improperly, it must be immediately labeled as defective and repaired within seven calendar days. The facility may continue to be used during this seven-day period, provided the licensee implements the continuous surveillance requirements of WAC 246-243-170 and uses an alarming rate meter. Test records for entrance controls and audible and visual alarm must be maintained for three years after the record is made.

(3) The department shall review and approve, in advance of construction, plans for permanent radiographic installations whose construction had not commenced by the effective date of these regulations. Construction of the permanent facility shall be in accordance with the plans approved by the department.

(4) A physical radiation survey shall be conducted and results recorded following construction or major modification of the facility to be used in the installation. Radiography shall not be conducted if exposure levels in unrestricted areas are greater than 2 mR in any hour. Any increase in source strength will require resurvey of the installation prior to the conduct of industrial radiography.

WAC 246-243-230 Appendix A--Minimum subjects to be covered in training radiographers. (1)

Fundamentals of radiation safety

(a) Characteristics of ionizing radiation

(b) Units of radiation dose and quantity of radioactivity

- (c) Hazards of exposure to radiation
 - (i) Radiation protection standards
 - (ii) Biological effects of radiation dose
- (d) Levels of radiation from sources of radiation
- (e) Methods of controlling radiation dose
 - (i) Working time
 - (ii) Working distances
 - (iii) Shielding
- (2) *Radiation detection instrumentation to be used*
 - (a) Use of radiation survey instruments
 - (i) Operation
 - (ii) Calibration
 - (iii) Limitations
 - (b) Survey techniques
 - (c) Use of personnel monitoring equipment
 - (i) Film badges
 - (ii) Pocket dosimeters
 - (iii) Thermoluminescent dosimeters
 - (iv) Alarming rate meters
- (3) *Radiographic equipment to be used*
 - (a) Operation and control of remote handling equipment, radiographic exposure equipment, and storage containers, including pictures or models of source assemblies (pigtailed)
 - (b) Inspection and maintenance of equipment
 - (c) Storage, control, and disposal of licensed material
- (4) *The requirements of pertinent federal and state regulations*

- (5) *The licensee's written operating and emergency procedures*
 - (6) *Case histories of radiography accidents.*
-

WAC 246-243-240 Appendix B -- General guidelines for inspection of radiography equipment.

- (1) Panoramic devices (devices in which the source is physically removed from shielded container during exposure) should be inspected for:
 - (a) Radiographic exposure unit;
 - (i) Abnormal surface radiation levels anywhere on camera;
 - (ii) Condition of safety plugs;
 - (iii) Proper operation of locking mechanism;
 - (iv) Condition of pigtail connector;
 - (v) Alignment of "S" tube with exit port;
 - (vi) Condition of carrying device (straps, handle, etc.);
 - (vii) Proper labeling;
 - (b) Source tube;
 - (i) Rust, corrosion, dirt, or sludge buildup inside the source tube;
 - (ii) Condition of source tube connector;
 - (iii) Condition of source stop;
 - (iv) Kinks or damage that could prevent proper operation;
 - (c) Control cables and drive mechanism;
 - (i) Proper drive mechanism for this camera, if appropriate;
 - (ii) Changes in general operating characteristics;
 - (iii) Condition of connector on drive cable;
 - (iv) Drive cable flexibility, wear, and rust;
 - (v) Excessive wear or damage to crank assembly parts;
 - (vi) Damage to drive cable conduit that could prevent the cable from moving freely;
 - (vii) Connection of the control cable connector with the pigtail connector for proper mating;
 - (viii) Proper operation of source position indicator, if applicable.
- (2) Directional beam devices should be inspected for:
 - (a) Abnormal surface radiation;
 - (b) Changes in the general operating characteristics of the unit;
 - (c) Proper operation of shutter mechanism;
 - (d) Chafing or binding of shutter mechanism;
 - (e) Damage to the device which might impair its operation;

- (f) Proper operation of locking mechanism;
- (g) Proper drive mechanism with this camera, if appropriate;
- (h) Condition of carrying device (strap, handle, etc.);
- (i) Proper labeling.

[Statutory Authority: RCW 70.98.050. 94-01-073, § 246-243-240, filed 12/9/93, effective 1/9/94. Statutory Authority: RCW 43.70.040. 91-02-049 (Order 121), recodified as § 246-243-240, filed 12/27/90, effective 1/31/91. Statutory Authority: RCW 70.98.080. 83-19-050 (Order 2026), § 402-36-165, filed 9/16/83.]

NEW SECTION

WAC 246-243-250 Appendix C--Radiographer certification. (1) Requirements for an independent certifying organization. An independent certifying organization shall:

- (a) Be an organization such as a society or association, whose members participate in, or have an interest in, the fields of industrial radiography;
- (b) Make its membership available to the general public nationwide that is not restricted because of race, color, religion, sex, age, national origin or disability;
- (c) Have a certification program open to nonmembers, as well as members;
- (d) Be an incorporated, nationally recognized organization that is involved in setting national standards of practice within its fields of expertise;
- (e) Have an adequate staff, a viable system for financing its operations, and a policy- and decision-making review board;
- (f) Have a set of written organizational by-laws and policies that provide adequate assurance of lack of conflict of interest and a system for monitoring and enforcing those by-laws and policies;
- (g) Have a committee, whose members can carry out their responsibilities impartially, to review and approve the certification guidelines and procedures, and to advise the organization's staff in implementing the certification program.

(h) Have a committee, whose members can carry out their responsibilities impartially, to review complaints against certified individuals and to determine appropriate sanctions;

(i) Have written procedures describing all aspects of its certification program, maintain records of the current status of each individual's certification and the administration of its certification program;

(j) Have procedures to ensure that certified individuals are provided due process with respect to the administration of its certification program, including the process of becoming certified and any sanctions imposed against certified individuals;

(k) Have procedures for proctoring examinations, including qualifications for proctors. These procedures must ensure that the individuals proctoring each examination are not employed by the same company or corporation (or a wholly owned subsidiary of such company or corporation) as any of the examinees;

(l) Exchange information about certified individuals with the department, the US Nuclear Regulatory Commission, other independent certifying organizations and/or agreement states and allow periodic review of its certification program and related records; and

(m) Provide a description to the department of its procedures for choosing examination sites and for providing an appropriate examination environment.

(2) Requirements for certification programs. All certification programs must:

(a) Require applicants for certification to:

(i) Receive training in the topics set forth in WAC 246-243-230 or equivalent NRC or agreement state regulations; and

(ii) Satisfactorily complete a written examination covering these topics;

(b) Require applicants for certification to provide documentation that demonstrates that the applicant has:

(i) Received training in the topics set forth in WAC 246-243-230 or equivalent NRC or agreement state

regulations;

(ii) Satisfactorily completed a minimum period of on-the-job training; and

(iii) Received verification by an agreement state or a NRC licensee that the applicant has demonstrated the capability of independently working as a radiographer;

(c) Include procedures to ensure that all examination questions are protected from disclosure;

(d) Include procedures for denying an application, revoking, suspending, and reinstating a certificate;

(e) Provide a certification period of not less than three years nor more than five years;

(f) Include procedures for renewing certifications and, if the procedures allow renewals without examination, require evidence of recent full-time employment and annual refresher training;

(g) Provide a timely response to inquiries, by telephone or letter, from members of the public, about an individual's certification status.

(3) Requirements for written examinations.

All examinations must be:

(a) Designed to test an individual's knowledge and understanding of the topics listed in WAC 246-243-230 or equivalent NRC or agreement state requirements;

(b) Written in a multiple-choice format;

(c) Have test items drawn from a question bank containing psychometrically valid questions based on the material in WAC 246-243-230.

RADIATION PROTECTION
DOH HOME | ABOUT DOH | WHAT'S NEW
TOPICS | PUBLICATIONS | LINKS | TOOLBOX

Copyright/Disclaimer Statement

Washington State Department of Health

Last Update : April 21, 2000

Comments or questions regarding this page? *Send mail to: Terry C.*

Frazer

Washington State Department of Health



Division of Radiation Protection

[DOH Home](#)

[Radiation Home](#)

[Rules & Regs](#)



WAC 246-220-007, 246-220-010, 246-221-001, 246-221-020,
246-221-060, 246-221-130, 246-235-090, 246-252-001,
246-252-030, 246-254-150

Copyright/Disclaimer Statement

Below is a description of the final changes to several sections from the Washington Administrative Code followed by the text. While every effort is made to ensure accuracy, please note the "Copyright/Disclaimer"!

The following definitions have been added or changed since the last printed version of WAC 246-220-010:

- Alert
- Background (proposed change)
- Constraint (proposed new definition)
- Member of the public
- Occupational dose
- Public dose
- Sealed Source 
- Site area emergency
- Unrestricted area
- Worker

 **In addition:** the following definitions have been deleted from this section and moved to a new chapter on transportation (Chapter 246-231 WAC):

"A₁" and "A₂"; "Highway route controlled quantity"; "Major processor"; "Normal form radioactive material"; "Nuclear waste"; "Package"; "Special form radioactive material"; "Type A packaging"; "Type A quantity"; "Type B packaging"; and

"Type B quantity"

Published in State Registers: WSR 95-01-108, WSR 98-13-037, WSR 99-15-105, and WSR 00-08-013 .

The following change was made in WAC 246-220-007:

- Definition of ALARA was corrected.

The following change was made in WAC 246-221-020 :

- Wording that conflicts with the federal rule was deleted.

The following change was made in WAC 246-235-090:

- Cross references were corrected.

The following change was made in WAC 246-221-001:

- Subsection (2) was amended to exclude from regulatory limitations any exposures received by individuals due to the presence of released patients.

Published in State Register: WSR 98-13-037

The following change was made in WAC 246-221-060:

- Subsections (1)(a) and (1)(b) were amended to exclude background radiation, medical administrations, exposures from released patients, and voluntary participation from being subject to regulatory limits.

Published in State Register: WSR 98-13-037

The following change was made in WAC 246-221-130:

- Subsection (2) was amended to eliminate the posting requirement if a hospitalized patient could be released otherwise.

Published in State Register: WSR 98-13-037

The following change was made in WAC 246-252-001:

- Cross references were corrected.

The following change was made in WAC 246-252-030:

- Cross references were corrected.

The following change was made in WAC 246-254-150:

- Cross references were corrected.

Published in State Register: WSR 00-08-013

WAC 246-220-007 Statement of philosophy. In accordance with the recommendations of the Environmental Protection Agency, formerly the Federal Radiation Council, approved by the president of the United States of America, persons engaged in activities under licenses issued by the Washington state department of health pursuant to the Atomic Energy Act of 1954, as amended, shall, in addition to complying with the requirements set forth in chapter 246-221 WAC, make every reasonable effort to maintain radiation exposures, and releases of radioactive materials in effluents to unrestricted areas, as low as is reasonably achievable. Such persons should make particular efforts to keep the radiation exposure of an embryo or fetus as low as is reasonably achievable during the entire gestation period as recommended by the National Council on Radiation Protection and Measurements. The term "as low as is reasonably achievable" means making every reasonable effort to maintain exposures to radiation as far below the dose limits in these regulations as is practical, consistent with the purpose for which the licensed or registered activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to the utilization of nuclear energy, ionizing radiation, and radioactive materials in the public interest.

WAC 246-220-010 Definitions

(The following are the new or amended definitions)

- "Alert" means events may occur, are in progress, or have occurred that could lead to a release of radioactive material but that the release is not expected to require a response by offsite response organizations to protect persons offsite.
- "Background radiation" means radiation from cosmic sources; naturally occurring radioactive materials, including radon, except as a decay product of source or special nuclear material, and including global fallout as it exists in the environment from the testing of nuclear

explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. "Background radiation" does not include sources of radiation from radioactive materials regulated by the department.

- "Constraint" or dose constraint means a value above which specified licensee actions are required.
- "Member of the public" means an individual except when the individual is receiving an occupational dose.
- "Occupational dose" means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee, registrant, or other person. Occupational dose does not include dose received: From background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released pursuant to chapters 246-239 and 246-240 WAC, from voluntary participation in medical research programs, or as a member of the public.
- "Public dose" means the dose received by a member of the public from exposure to sources of radiation under the licensee's or registrant's control or to radiation or radioactive material released by the licensee. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released pursuant to chapters 246-239 and 246-240 WAC, or from voluntary participation in medical research programs
-  "Sealed source" means any radioactive material that is encased in a capsule designed to prevent leakage or the escape of the radioactive material.
- "Site area emergency" means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite.
- "Unrestricted area" (uncontrolled area) means any area which is not a restricted area. Areas where the external dose exceeds 2 mrem in any one hour or where the public dose, taking into account occupancy factors, will exceed 100 mrem total effective dose equivalent in any one year must be restricted.
- "Worker" means an individual engaged in activities under a license or registration issued by the department and controlled by a licensee or registrant but does not include the licensee or registrant. Where the licensee or registrant

is an individual rather than one of the other legal entities defined under "person," the radiation exposure limits for the worker also apply to the individual who is the licensee or registrant. If students of age eighteen years or older are subjected routinely to work involving radiation, then the students are considered to be workers. Individuals of less than eighteen years of age shall meet the requirements of WAC 246-221-050.

WAC 246-221-001 Purpose and scope.

- (1) This chapter establishes standards for protection against radiation hazards. Except as otherwise specifically provided, this chapter applies to all licensees or registrants. The requirements of this chapter are designed to control the receipt, possession, use, transfer, and disposal of sources of radiation by any licensee or registrant so the total dose to an individual, including doses resulting from all sources of radiation other than background radiation, does not exceed the standards for protection against radiation prescribed in this chapter.
 - (2) The limits in this chapter do not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, to exposure from individuals administered radioactive material and released pursuant to chapters 246-239 and 246-240 WAC, or to voluntary participation in medical research programs.
 - (3) Nothing in this chapter shall be interpreted as limiting actions that may be necessary to protect health and safety in an emergency.
 - (4) The definitions contained in WAC 246-220-010 also apply to this chapter. WAC 246-220-007, Statement of philosophy, is directly applicable to this chapter.
-

WAC 246-221-020 Determination of prior occupational dose. (1) For each individual who is likely to receive, in a year, an occupational dose requiring monitoring pursuant to WAC 246-221-090 and 246-221-100, the licensee or registrant shall:

- (a) Determine the occupational radiation dose received during the current year; and
- (b) Attempt to obtain the records of lifetime cumulative occupational radiation dose.

...

WAC 246-221-060 Dose limits for individual members of the public.

(1) Each licensee or registrant shall conduct operations so that:

(a) The total effective dose equivalent to individual members of the public from the licensed or registered operation does not exceed 1 mSv (0.1 rem) in a year, exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released pursuant to chapters 246-239 and 246-240 WAC, from voluntary participation in medical research programs, and from the licensee's or registrant's disposal of radioactive material into sanitary sewerage in accordance with WAC 246-221-190; and

(b) The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released pursuant to chapters 246-239 and 246-240 WAC, does not exceed 0.02 mSv (0.002 rem) in any one hour.

(2) If the licensee or registrant permits members of the public to have access to restricted areas, they shall be escorted and the limits for members of the public continue to apply to those individuals.

(3) Notwithstanding subsection (1) of this section, a licensee or registrant may continue to operate a facility constructed and put into operation prior to January 1, 1994, where the annual dose limit for an individual member of the public is more than 1 mSv (0.1 rem) and less than 5 mSv (0.5 rem) total effective dose equivalent, provided:

(a) The facility's approved operating conditions for each radiation source remain the same. Any increase in the following operating conditions shall require reevaluation and/or modification of the facility shielding applicable to the source of radiation to meet the 1 mSv (0.1 rem) total effective dose equivalent limit for individual members of the public: size of the radiation source, workload, or occupancy factors associated with the source of radiation; and

(b) Any change in the permanent shielding of the facility due to remodeling, repair or replacement shall require the facility to

meet the 1 mSv (0.1 rem) total effective dose equivalent limit for individual members of the public for areas affected by that portion of the shielding.

(4) Each licensee or registrant shall maintain records sufficient to demonstrate compliance with the dose limit for individual members of the public.

WAC 246-221-130 Exceptions from posting and labeling requirements.

(1) A room or area is not required to be posted with a caution sign because of the presence of a sealed source, provided the radiation level 30 centimeters from the surface of the source container or housing does not exceed 0.05 mSv (five millirem) per hour.

(2) Rooms or other areas in hospitals that are occupied by patients are not required to be posted with caution signs because of the presence of patients containing radioactive material provided that the patient could be released from licensee control pursuant to chapters 246-239 and 246-240 WAC.

(3) Caution signs are not required to be posted in areas or rooms containing radioactive material for periods of less than eight hours provided that:

(a) The material is constantly attended during such periods by an individual who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in excess of the limits established in this part; and

(b) Such area or room is subject to the licensee's or registrant's control.

(4) A room or other area is not required to be posted with a caution sign because of the presence of radioactive material prepared for transport and packaged and labeled in accordance with regulations of the United States Department of Transportation.

(5) A room or area is not required to be posted with a caution sign because of the presence of a diagnostic x-ray system used solely for healing arts purposes.

(6) The interior of a teletherapy room is not required to be

posted with caution signs provided such posting is conspicuously placed at the entrance(s) to the rooms.

(7) A licensee is not required to label:

(a) Containers holding licensed material in quantities less than the quantities listed in WAC 246-221-300; or

(b) Containers holding licensed material in concentrations less than those specified in WAC 246-221-290, Table III; or

(c) Containers attended by an individual who takes the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in excess of the limits established by this chapter; or

(d) Containers when they are in transport and packaged and labeled in accordance with the regulations of the United States Department of Transportation; or

(e) Containers such as those located in water-filled canals, storage vaults, or hot cells, that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers, provided the contents are identified to these individuals by a readily available written record. The record shall be retained as long as the containers are in use for the purpose indicated on the record; or

(f) Installed manufacturing or process equipment, such as chemical process equipment, piping, and tanks.

(8) Each licensee, prior to removal or disposal of empty uncontaminated containers to unrestricted areas, shall remove or deface the radioactive material label or otherwise clearly indicate that the container no longer contains radioactive materials.

WAC 246-235-090 Special requirements for specific licenses of broad scope.

...

(5) Specific licenses of broad scope are subject to the following conditions:

(a) Unless specifically authorized by the department, persons licensed under this section shall not:

- (i) Conduct tracer studies in the environment involving direct release of radioactive material;
- (ii) Receive, acquire, own, possess, use or transfer devices containing 100,000 curies or more of radioactive material in sealed sources used for irradiation of materials;
- (iii) Conduct activities for which a specific license issued by the department under WAC 246-235-080 through 246-235-086 or WAC 246-235-091 through 246-235-105 is required; or
- (iv) Add or cause the addition of radioactive material to any food, beverage, cosmetic, drug or other product designed for ingestion or inhalation by, or application to, a human being.

WAC 246-252-001 Reclamation and decommissioning. A specific plan for reclamation and disposal of tailings and for decommissioning the site of uranium or thorium milling operations shall be included as part of the proposed action assessed under SEPA regulations and guidelines as required by WAC 246-235-086(1) for licensing of environmentally significant operations. For any uranium or thorium mill in operation on or before the effective date of this regulation for which a plan for reclamation and disposal of tailings and decommissioning of the site has not been submitted and assessed, such a plan must be submitted to the department and a final environmental impact statement or final declaration of nonsignificance must accompany or precede the license renewal.

WAC 246-252-030 Criteria related to disposition of uranium mill tailings or wastes.

...

(9) Criterion 9 -

...

(d)

...

Long-term care requirements. Pursuant to chapter 70.121 RCW, and as otherwise provided in WAC 246-235-086(4), a long-term care trust fund shall be established by source material

milling licensees prior to the issuance of the license.

(10) Criterion 10 - (a) A minimum charge of two hundred fifty thousand dollars (1978 United States dollars) accrued as specified in WAC 246-235-086(4) to cover the costs of long-term surveillance shall be paid by each mill operator to the agency prior to the termination of a uranium or thorium mill license.

...

WAC 246-254-150 Fees for perpetual care and maintenance.

...

(2) Licensees under this section may make additional payments to meet the minimum, prior to the release of any surety arranged by the licensee in accordance with WAC246-235-086(4).

...

RADIATION PROTECTION
DOH HOME | ABOUT DOH | WHAT'S NEW
TOPICS | PUBLICATIONS | LINKS | TOOLBOX

Copyright/Disclaimer Statement
Washington State Department of Health
Last Update : April 24, 2000
Comments or questions regarding this page? *Send mail to: Terry C. Frazee*