

**Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection**

Chapter 1. General Provisions

§101. Scope

* * *

[See Prior Text in A]

B. Attention is directed to the fact that state regulation of source material, by-product material, and special nuclear material in quantities not sufficient to form a critical mass is subject to the provisions of the agreement between the state and the U.S. Nuclear Regulatory Commission and to Part 150 of the U.S. Nuclear Regulatory Commission's regulations (10 CFR 15040).

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), repealed and repromulgated by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§116. Public Participation in Licensing Actions

* * *

[See Prior Text in A-A.2]

3. Determination of Fact-finding Hearing Necessity. Comments from the public and involved local, parish, and state agencies will be reviewed. Any person, within 20 days of date of publication of the legal notice specified in LAC 33:XV.116.BA.2, may request the administrative authority to call for a fact-finding hearing. The administrative authority will determine the necessity for a fact-finding hearing based on comments received and other available information. The request for the hearing must be in writing and shall contain the following information:

* * *

[See Prior Text in A.3.a-4.c]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), repealed and repromulgated by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January

1992), amended by the Office of Environmental Assessment, Environmental Planning Division,
LR

Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection

Chapter 3. Licensing of Radioactive Material

Subchapter A. Exemptions

§303. Source Material

A. Any person is exempt from ~~this Chapter~~ these regulations 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 0.05 percent of the mixture, compound, solution, or alloy.

* * *

[See Prior Text in B-D]

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§322. General Licenses: Radioactive Material Other Than Source Material

* * *

[See Prior Text in A-D.3.h.ii]

i. comply with the provisions of LAC 33:XV.442485 and 443486 for reporting radiation incidents, theft or loss of licensed material. Such person shall be exempt from the other requirements of Chapters 4 and 10 of these regulations.

* * *

[See Prior Text in D.3.i-E.1.b]

2. Persons who own, receive, acquire, possess, or use luminous safety devices pursuant to the general license in LAC 33:XV.322.E.1 are exempt from the requirements of Chapters 4 and 10 of these regulations except that they shall comply with the provisions of LAC 33:XV.442485 and 443486.

* * *

[See Prior Text in E.3-I.4]

5. Any person using radioactive material pursuant to the general license of LAC 33:XV.322.I.1 is exempt from the requirements of Chapters 4 and 10 of these regulations with respect to radioactive material covered by that general license, except that such persons using the mock iodine-125 described in LAC 33:XV.322.I.1 shall comply with the provisions of LAC 33:XV.431, ~~442485~~, and ~~443486~~.

* * *

[See Prior Text in J-J.2.b]

c. are exempt from the requirements of LAC 33:XV.Chapter 4 and 10, except that such persons shall comply with the provisions of LAC 33:XV.431, ~~442485~~, and ~~443486~~.

* * *

[See Prior Text in J.3-4]

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§325. General Requirements for the Issuance of Specific Licenses

* * *

[See Prior Text in A-D]

1. Each applicant for a specific license authorizing the possession and use of unsealed by-product material of half-life greater than 120 days and in quantities exceeding 10⁵ times the applicable quantities set forth in Appendix B of ~~Chapter 4 of these regulations~~ this Chapter shall submit a decommissioning funding plan as described in LAC 33:XV.325.D.5. The decommissioning funding plan must also be submitted when a combination of isotopes is involved if R divided by 10⁵ is greater than one (unity rule), where R is defined here as the sum of the ratios of the quantity of each isotope to the applicable value in Appendix ~~CB~~ CB of this Chapter.

* * *

[See Prior Text in D.2-3.b]

c. Each holder of a specific license issued before the effective date of these regulations and of a type described in Subsection D.2 of this Section shall submit, on or before July 20, 1992, a certification of financial assurance for decommissioning, or a decommissioning funding plan, as described in Subsection D.~~65~~ 65 of this Section, in accordance with the criteria set forth in this Section.

* * *

[See Prior Text in D.3.d]

4. The following table lists required amounts of financial assurance for decommissioning by quantity of material.

a. Greater than 10^4 but less than or equal to 10^9 times the applicable quantities of Appendix B of Chapter 43 in unsealed form. (For a combination of isotopes, if R, as defined in LAC 33:XV.325.D.1, divided by 10^4 is greater than 1 but R divided by 10^9 is less than or equal to 1.)	\$750,000
b. Greater than 10^5 but less than or equal to 10^4 times the applicable quantities of Appendix B of Chapter 43 in unsealed form. (For a combination of isotopes, if R, as defined in LAC 33:XV.325.D.1, divided by 10^5 is greater than 1 but R divided by 10^4 is less than or equal to 1.)	\$150,000
c. Greater than 10^{10} times the applicable quantities of Appendix B of Chapter 43 in sealed Sources or plated foils. (For a combination of isotopes, if R, as defined in LAC 33:XV.325.D.1, divided by 10^{10} is greater than 1.)	\$75,000

* * *

[See Prior Text in D.5-7.d.iv]

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§326. Special Requirements for Issuance of Certain Specific Licenses for Radioactive Material

* * *

[See Prior Text in A-E.1.b]

c. The applicant will have an adequate internal inspection system, or other management control, to assure that license provisions, regulations, and the applicant's operating and emergency procedures are followed by radiographers and radiographers' assistants; the inspection system shall include the performance of internal inspections not to exceed three months and the retention of records of such inspections for ~~two~~three consecutive years.

* * *

[See Prior Text in E.1.d]

e. The applicant who desires to conduct his or her own leak tests of sealed sources or exposure devices containing depleted uranium (DU) shielding has established adequate procedures to be followed in ~~leak testing sealed sources~~ for possible leakage and contamination and submits to the division a description of such procedures including:

* * *

[See Prior Text in E.1.e.i-iii]

f. The applicant proposes to conduct a program for inspection and maintenance of radiographic exposure devices and storage containers that is adequate to assure proper functioning of components important to safety;

g. The applicant submits procedures for verifying and documenting the certification status of radiographers and for ensuring that the certification of individuals as radiographers remains valid;

h. The applicant submits the qualifications of the individual(s) designated as the radiation safety officer (RSO) as described in LAC 33:XV.575.E;

i. The applicant who intends to perform calibrations of survey instruments and/or alarming ratemeters must describe methods to be used and the experience of the person(s) who will perform the calibrations. All calibration must be performed according to the procedures described and at the intervals prescribed in LAC 33:XV.543 and 577;

j. The applicant identifies and describes the location(s) of all field stations and permanent radiographic installations;

k. The applicant identifies the locations where all records required by these regulations will be maintained.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), repealed and repromulgated by the Office

of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended LR 24:2092 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

Appendix B Exempt Quantities	
Radioactive Material	Microcuries
<u>Americium-241 (Am-241)</u>	<u>.01</u>
* * * [See Prior Text in Antimony-122 - Platinum-197]	
<u>Plutonium-239 (Pu-239)</u>	<u>0.01</u>
* * * [See Prior Text in Polonium-210 - Promethium-149]	
<u>Radium-226 (Ra-226)</u>	<u>0.01</u>
* * * [See Prior Text in Rhenium-186 - Silicon-31]	
<u>Silver-105 (Ag-105)</u>	<u>10</u>
* * * [See Prior Text in Silver-110m - Thallium-201]	
<u>Thallium-202 (Tl-202)</u>	<u>100</u>
* * * [See Prior Text in Thallium-204]	
<u>Thorium (natural)¹ (Th)</u>	<u>100</u>
* * * [See Prior Text in Thulium-170 - Tungsten-187]	
<u>Uranium (natural)² (U)</u>	<u>100</u>
<u>Uranium-233 (U-233)</u>	<u>0.01</u>
<u>Uranium-234 – Uranium-235 (U-234 – U-235)</u>	<u>0.01</u>
* * * [See Prior Text in Vanadium-48 – Zirconium-95]	
<u>Zirconium-97 (Zr-97)</u>	<u>10</u>
<u>Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition</u>	<u>0.01</u>

<p><u>Any radionuclide other than alpha emitting radionuclides, not listed above or mixtures of beta emitters of unknown composition</u></p>	<p><u>0.1</u></p>
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¹Based on alpha disintegration rate of Th-232, Th-230, and their daughter products.

²Based on alpha disintegration rate of U-238m U-234, and U-235.

~~Any radioactive material not listed above other than alpha emitting radioactive material. 0.1~~

Note 1. Where there is involved a combination of isotopes, the limit for the combination should be derived as follows:

Determine the amount each isotope possessed and 1,000 times the amount in Appendix B for each of those isotopes when not in combination. The sum of the ratios of those quantities may not exceed 1.

Example:

$$\frac{\text{Amt. of Isotope A possessed}}{1000 \times \text{Appendix B quantity for Isotope A}} + \frac{\text{Amt. of Isotope B possessed}}{1000 \times \text{Appendix B quantity for Isotope B}} = 1$$

Note 2. To convert microcuries (µCi) to SI units kilobecquerels (kBq), multiply the above values by 37.

Example:

Zirconium-97 (10 µCi multiplied by 37 is equivalent to 370 kBq).

Appendix C Financial Assurance Arrangements Recommended Amounts for Mitigation, Liability, and Decommissioning			
By Title	Clean up	Third Party &/or Off-Site Damages	Decommissioning
A. Licensees 1. Manufacturing & Distribution 2. Radiography 3. Gauges 4. Well Logging 5. Nuclear Medicine 6. Rad. Therp. 7. Acad. 8. R & D 9. Instru. Calib. 10. Irradiators 11. Ind. other than gauges 12. Consultants 13. General Lic. 14. Others not listed in category A	As determined by the chosen method	As determined by the chosen method	For Category A as a whole by <u>quantity of material (Q)</u> : 1. $Q > 10^{10}$ x Appendix B, Chapter 43, as sealed sources = \$75,000. 2. $10^3 - 10^4$ x Appendix B, Chapter 4, unsealed sources (10^4 x Appendix B, Chapter 3, unsealed sources) $\geq Q > (10^3$ x Appendix B, Chapter 3, unsealed sources), or 10-100 mCi source materials, dispersible form = \$150,000. 3. $10^4 - (10^5$ x Appendix B, Chapter 43, unsealed sources) $\geq Q > (10^4$ x Appendix B, Chapter 3, unsealed sources) = \$750,000.
B. Low Quantity 1. In Vitro 2. Gas Chromatograph 3. Greater than or Equal to 100 x to 1000 x Exempt Quantity 4. Unsealed, discrete alpha emitters, 10 μ Ci total 5. Check sources of sufficient quantity to require leak testing	As determined by the chosen method	As determined by the chosen method	NA for this category.

Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection

Chapter 4. Standards for Protection Against Radiation

§453. Labeling Containers and Radiation Machines

A. The licensee or registrant shall ensure that each container of licensed or registered source of radiation bears a durable, clearly visible label bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL, NOTIFY CIVIL AUTHORITIES [or "NAME OF COMPANY"]" or "DANGER, RADIOACTIVE MATERIAL, NOTIFY CIVIL AUTHORITIES [or "NAME OF COMPANY"]." The label shall also provide information such as the radionuclides present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment, to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.

* * *

[See Prior Text in B-C]

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 19:1421 (November 1993), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§487. Reports of Exposures, Radiation Levels, and Concentrations of Radioactive Material Exceeding the Limits

* * *

[See Prior Text in A-B.1.b]

c. the cause of the elevated exposures, dose rates, or concentrations; ~~and~~
d. corrective steps taken or planned to ensure against a recurrence, including the schedule for achieving conformance with applicable limits, generally applicable environmental standards, and associated license or registration conditions;~~and~~
e. information required by LAC 33:XV.547.E if the overexposure involves failure of safety components of radiography equipment.

* * *

[See Prior Text in B.2-C]

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 19:1421 (November 1993), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection

Chapter 5. Radiation Safety Requirements for Industrial Radiographic Operations

§503. Definitions

* * *
[See Prior Text]

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

Control drive mechanism – a device that enables the source assembly to be moved to and from the exposure device.

* * *
[See Prior Text]

Lay-barge radiography – industrial radiography performed on any water vessel used for laying pipe.

* * *
[See Prior Text]

Offshore platform radiography – industrial radiography conducted from a platform over a body of water.

* * *
[See Prior Text]

Underwater radiography – industrial radiography performed when the radiographic exposure device and/or related equipment are beneath the surface of the water.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), LR 23:1138 (September 1997), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§505. 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 or registrant shall maintain adequate safeguards against tampering with and loss of records.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR

§5056-539. Reserved

Chapter 5. Radiation Safety Requirements for Industrial Radiographic Operations Subchapter A. Equipment Control

§540. Limits on Levels of Radiation for Radiographic Exposure Devices and Storage Containers

Radiographic exposure devices measuring less than 4 inches (10 centimeters) from the sealed source storage position to any exterior surface of the device shall have no radiation level in excess of ~~50 milliroentgens (1.29×10^{-5} C/kg)~~ 0.5 millisieverts (50 mrem) per hour at 6 inches (15 centimeters) from any exterior surface of the device. Radiographic exposure devices measuring a minimum of 4 inches (10 centimeters) from the sealed source storage position to any exterior surface of the device and all storage containers for sealed sources or outer containers for radiographic exposure devices shall have no radiation level in excess of ~~200 milliroentgens (5.16×10^{-5} C/kg)~~ 2 millisieverts (200 mrem) per hour at any exterior surface and ~~10 milliroentgens (2.58×10^{-6} C/kg)~~ 0.1 millisieverts (10 mrem) per hour at 1 meter from any exterior surface. The radiation levels specified are with the sealed source in the shielded position.

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§541. Locking of Sources of Radiation

A. Each source of radiation shall be provided with a lock or lockable outer container designed to prevent unauthorized or accidental production of radiation or removal or exposure of a sealed source and shall be kept locked at all times (and if key-locked, with the key removed at all times) except when under the direct surveillance of a radiographer or instructor or as may be otherwise authorized pursuant to LAC 33:XV.585. Each storage container likewise shall be provided with a lock and shall be kept locked when containing sealed sources except when the container is under the direct surveillance of a radiographer or instructor.

* * *

[See Prior Text in B-C]

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¶542. Storage and Transportation Precautions

A. Locked radiographic exposure devices, source changers, storage containers, and radiation machines shall be physically secured to prevent tampering or removal by unauthorized personnel. The licensee shall store radioactive material in a manner that will minimize danger from explosion or fire.

B. The licensee may not use a radiographic exposure device, source changer, or a container to store radioactive material unless the radiographic exposure device, source changer, or container has securely attached to it a durable, legible, and clearly visible label as specified in LAC 33.XV.453. Radiographic exposure devices, source changers, or transport containers that contain radioactive material shall not be stored in residential locations. This requirement does not apply to storage of radioactive material in a vehicle in transit for use at temporary job sites, if the licensee complies with LAC 33:XV.542.C, and if the vehicle does not constitute a permanent storage location as described in LAC 33:XV.542.D.

C. If a vehicle is to be used for storage of radioactive material, a vehicle survey shall be performed after securing radioactive material in the vehicle and before transport to ensure that radiation levels do not exceed the limits specified in LAC 33:XV.421.A at the exterior surface of the vehicle.

1. 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.

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 Chapter 15 of these Regulations.

* * *

[See Prior Text in D-D.3]

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

¶543. Radiation Survey Instruments

A. The licensee or registrant 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 Chapter and LAC 33:XV.430 . Instrumentation required by this Section shall have a range such that ~~2 milliroentgens (5.16×10^{-7} C/kg)~~ 0.02 millisieverts (2 millirems) per hour through ~~1 roentgen (2.58×10^{-4} C/kg)~~ 0.01 sievert (1 rem) per hour can be measured.

* * *

[See Prior Text in B-B.2]

3. at two points located approximately $\frac{1}{3}$ and $\frac{2}{3}$ of full-scale on each scale for linear scale instruments; at midrange of each decade, and at two points of at least one decade for logarithmic scale instruments; and according to the manufacturers procedures at three points between 0.02 and 10 millisieverts (2 and 1000 millirems per hour) for digital instruments.

C. Records of these calibrations shall be maintained for ~~two~~three years after the calibration date for inspection by the division.

D. Each radiation survey instrument shall be checked with a radiation source at the beginning of each day of use and at the beginning of each work shift to ensure it is operating properly. Records of the checks shall be maintained for ~~two~~three years.

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), LR 23:1138 (September 1997), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

¶544. Leak Testing, Repair, Tagging, Opening, Modification, and Replacement, and Records of Receipt and Transfer of Sealed Sources

* * *

[See Prior Text in A-B]

C. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 Bq) 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, by a procedure which has been approved pursuant to LAC 33:XV.326.E.1.e. Records of leak test results shall be kept in units of microcuries (becquerels) and maintained for inspection by the division for ~~two~~three years.

* * *

[See Prior Text in D-E]

F. Each exposure device using depleted uranium (DU) shielding and an "S" tube configuration must be tested for DU contamination at intervals not to exceed 12 months. The analysis must be capable of detecting the presence of 0.005 microcuries (185 Bq) of radioactive material on the test sample and must be performed by a person specifically authorized by the administrative authority, U.S. Nuclear Regulatory Commission, or any other agreement state to perform the analysis. Should such testing reveal the presence of 0.005 microcuries (185 Bq) 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. Should the evaluation reveal 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 12 months. A record of the DU leak test must be made in accordance with Part C of this Section.

G. Each licensee or registrant shall maintain records showing the receipts and transfers of sealed sources and devices using DU for shielding and retain each record for inspection by the department for three years. These records must include the date, 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 source of radiation and/or device, as appropriate.

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

¶545. Quarterly Inventory

Each licensee shall conduct a quarterly physical inventory to account for all sealed sources and licensed devices received or possessed under his or her license, including devices containing depleted uranium. The records of the inventories shall be maintained for inspection by the division for at least ~~two~~three consecutive years from the date of the inventory and shall include the quantities and kinds of radioactive material, the location of sealed sources and/or devices, the date of the inventory, the name of individual(s) performing the inventory, the manufacturer, the model number, and the serial number.

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

¶546. Utilization Logs

A. Each licensee or registrant shall maintain current logs, which shall be kept available for inspection by the division for ~~two~~three consecutive years from the date of the recorded event, showing for each source of radiation the following information:

1. a unique identification, ~~such as a~~ describing the make, model, and serial number of each radiation machine, each radiographic exposure device in which the sealed source is located, and each sealed source;
2. the identity and signature of the radiographer to whom the source is assigned;

* * *

[See Prior Text in A.3-4]

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

¶547. Inspection and Maintenance of Radiographic Exposure Devices and Storage Containers

~~A. Each licensee or registrant shall ensure that checks for obvious defects in radiation machines, radiographic exposure devices, and associated equipment are performed and recorded prior to each day of use or work shift. The licensee or registrant shall perform visual and operability checks on radiation machines, radiographic exposure devices, transport and storage containers, source changers, and associated equipment prior to each day's use, or work shift, to ensure that:~~

1. the equipment is in good condition;
2. the sources are adequately shielded; and
3. required labeling is present.

~~B. Each licensee or registrant shall conduct a program of~~ have written procedures for and perform at least quarterly inspection and routine maintenance of radiation machines, radiographic exposure devices, source changers, storage containers, and associated equipment to assure proper functioning of components important to safety. All appropriate parts shall be maintained in accordance with manufacturer's specifications. The licensee's 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. Records of inspection and maintenance shall be maintained for inspection by the division for two consecutive years from the date of the recorded event.

C. Records of inspection and maintenance conducted pursuant to Subsections A and B of this Section shall be maintained for inspection by the department for three consecutive years from the date of the recorded event. The record of inspection must include the date of check or inspection, name of inspector, equipment involved, any problems found, and what repair and/or maintenance, if any, was done. If any inspection conducted pursuant to LAC 33:XV.547.Subsections A and B of this section reveals damage to components critical to radiation safety, the device shall be removed from service and labeled as defective until repairs have been made.

* * *

[See Prior Text in D-D.3]

E. The licensee or registrant shall include the following information in each report required by LAC 33:XV.547.D and in each report of overexposure submitted under LAC 33:XV.487 which involves failure of safety components of radiography equipment:

* * *

[See Prior Text in E.1-7]

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¶548. Permanent Radiographic Installations

A. Permanent radiographic installations having high-radiation area entrance controls of the type described in LAC 33:XV.436.A and B shall also meet the following requirements:

* * *

[See Prior Text in A.1]

2. the control device or alarm system as described in LAC 33:XV.436.A and B shall be tested for proper operation at the beginning of each day of equipment use. If a control device or alarm system is operating improperly, it shall be immediately labeled as defective and repaired before industrial radiographic operations are resumed. Records of these tests shall be maintained for inspection by the division for ~~two~~three consecutive years from the date of the event or until disposition is authorized.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

Subchapter B. Personal Radiation Safety Requirements for Radiographers

¶575. Training and Testing

* * *

[See Prior Text in A-A.6]

B. Each licensee or registrant shall maintain, for inspection by the division, until disposition is authorized by the division, the following records for each radiographer and radiographer trainee:

1. ~~records of the above training and certification.~~ The record must include radiographer certification documents and verification of certification status, including copies of written tests, and dates and results of oral tests and field examinations, and the names of individuals conducting and receiving the oral and field examinations; and

2. records of annual refresher safety training and semi-annual inspections of job performance. The records must list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and names of the instructors and attendees. For inspections of job performance, the records must also include a list showing the items checked and any non-compliance observed by the radiation safety officer or designee.

* * *

[See Prior Text in C-E.3]

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¶576. Operating and Emergency Procedures

A. The licensee's or registrant's operating and emergency procedures shall include instructions in at least the following:

* * *

[See Prior Text in A.1-4]

5. personnel monitoring and the use of personnel monitoring equipment, including steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off scale or an alarm ratemeter alarms unexpectedly ;

* * *

[See Prior Text in A.6-8]

9. maintenance of records; ~~and~~

10. the daily inspection, ~~and~~ maintenance, and operability checks of radiographic exposure devices, radiation machines, associated equipment, survey meters, and personnel monitoring devices; and

11. source recovery procedure if licensee will perform source recoveries.

B. Each licensee shall maintain a copy of current operating and emergency procedures until the department terminates the license. Superseded material must be retained for three years after the change is made.

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HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

¶577. Personnel Monitoring Control

A. No licensee or registrant shall permit an individual to act as a radiographer, instructor, or radiographer trainee unless, at all times during radiographic operations, each such individual wears a direct-reading pocket dosimeter, an alarm ratemeter, and either a film badge or a thermoluminescent dosimeter (TLD), except that for permanent radiography facilities where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required.

B. Pocket dosimeters shall have a range of zero to at least ~~200 milliroentgens~~ $(5.16 \times 10^{-5} \text{ C/kg})$ ~~200 millirem~~ (200 millisieverts (200 millirems)) and shall be recharged at least daily or at the start of each shift. Electronic personal dosimeters may only be used in place of ion-chamber pocket dosimeters. Pocket dosimeters, or electronic personal dosimeters, shall be checked for correct response to radiation at periods not to exceed one year. Acceptable dosimeters shall read within ~~±30~~ ±20 percent of the true radiation exposure. Records of positive dosimeter response shall be maintained for ~~two~~ three years by the licensee or registrant for division inspection.

C. Each film badge or thermoluminescent dosimeter shall be assigned to and worn by only one individual. Film badges must be replaced at periods not to exceed one month. After replacement, each film badge or TLD must be processed as soon as possible.

D. Direct reading dosimeters, such as electronic personal dosimeters or Pocket dosimeters shall be read and exposures recorded at least daily with use.

E. If an individual's pocket dosimeter is discharged beyond its range (i.e., goes "off-scale"), or an individual's electronic pocket dosimeter reads greater than 2 millisieverts (200 millirems) and the possibility of radiation exposure can not be ruled out as the cause, industrial radiographic operations by that individual shall cease and the individual's film badge or TLD shall be processed immediately. The individual shall not return to work with sources of radiation until a determination of the radiation exposure has been made. This determination must be made by the RSO or the RSO's designee. The results of this determination must be recorded and maintained indefinitely or until the department authorizes their disposition.

F. Records of the pocket dosimeter readings shall be maintained for inspection by the division for ~~two~~ three consecutive years. If the dosimeter readings were used to determine external radiation dose, the records shall be maintained indefinitely or until the division authorizes their disposition.

G. 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. The results of the calculated exposure and the time period for which the film badge or TLD was lost or damaged must be recorded and maintained indefinitely or until the department authorizes their disposition.

H. Each alarm ratemeter must:

1. be checked and recorded to ensure that the alarm functions properly (sounds) prior to use at the start of each shift;
2. be set to give an alarm signal at the preset dose rate of 5 mSv/hr (500 millirems/hour);
3. require special means to change the preset alarm function; and
4. be calibrated at periods not to exceed one year for correct response to radiation: acceptable ratemeters must alarm within ±20 percent of the true radiation dose rate. Records of calibrations will be maintained for ~~two~~ three years.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and

Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

Subchapter C. Precautionary Procedures in Radiographic Operations

§585. Security

A. During each radiographic operation, a radiographer or instructor shall maintain continuous direct, visual surveillance of the operation to protect against unauthorized entry into a radiation area or high radiation area, as defined in LAC 33:XV.Chapter 1, except:

1. where the high radiation area is equipped with a control device or alarm system as described in LAC 33:XV.436.A; or
2. where the high radiation area is locked to protect against unauthorized or accidental entry.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§587. Radiation Surveys and Survey Records

A. No radiographic operation shall be conducted unless calibrated and operable radiation survey instrumentation, as described in LAC 33:XV.543, is available and used at each site where radiographic exposures are made.

B. A physical radiation survey shall be made after each radiographic exposure utilizing radiation machines or sealed sources to determine that the machine is "off" or that the sealed source has been returned to its shielded position before exchanging films, repositioning the exposure head, or dismantling equipment. The entire circumference or perimeter of the radiographic exposure device shall be surveyed. If the radiographic exposure device has a source guide tube, the survey shall also include the entire length of the guide tube.

C. A physical radiation survey shall be made to determine that each sealed source is in its shielded position any time the source is exchanged and prior to securing the radiographic exposure device or storage container as specified in LAC 33:XV.541.

D. A survey shall be made of the storage area as defined in LAC 33:XV.503 whenever a radiographic exposure device is being placed in storage.

E. Records shall be kept of the surveys required by LAC 33:XV.587.C and D. Such records shall be maintained for inspection by the division for ~~two~~ three consecutive years after completion of the survey. If the survey has been used to determine an individual's exposure, the records of the survey shall be maintained until the division authorizes their disposition.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§588. Documents and Records Required at Temporary Job Sites and Applicable Field Stations

A. Each licensee or registrant conducting industrial radiography at a temporary job site or applicable field station shall have the following documents and records available at that job site or field station for inspection by the department:

1. current copy of appropriate license, registration certificate, or other authorizing documents;
2. operating and emergency procedures;
3. applicable regulations;
4. survey records required pursuant to LAC 33:XV.472 and 587.D for the period of operation at the site;
5. ~~daily pocket~~ dosimeter records, from daily pocket dosimeters and/or electronic personal dosimeters, for the period of operation at the site as required by Section 577 of this Chapter; ~~and~~
6. the latest instrument calibration and leak test records for specific devices and sealed sources in use at the site as required by Sections 543 and 544 of this Chapter. Acceptable records include tags or labels which are affixed to the device or survey meter; ~~and~~
7. a copy of the written confirmation letter issued by the department granting radiographer trainee status to any radiographer trainee performing industrial radiography at the temporary job site;;
8. records of equipment problems identified in daily checks of equipment as required in Section 547 of this Chapter;
9. evidence of the latest calibration of alarming ratemeters and operability checks of dosimeters as required by Section 577 of this Chapter;
- 10 the shipping papers for the transportation of radioactive materials as required by LAC 33:XV.1502; and
- 11 when operating under reciprocity pursuant to LAC 33:XV.390, a copy of the applicable state license or registration, or Nuclear Regulatory Commission license authorizing the use of sources of radiation.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§590. Specific Requirements for Radiographic Personnel Performing Industrial Radiography

* * *

[See Prior Text in A-D]

1. The radiographer's assistant or radiographer trainee shall be under the personal supervision of a radiographer when using radiographic exposure devices, associated equipment, or a sealed source, or while conducting radiation surveys required by Section 587 of this Chapter to determine that the sealed source has returned to its shielded position or the radiation machine is off after an exposure. The personal supervision must include:

- a. the radiographer's physical presence at the site where the sources of radiation are being used;
- b. the availability of the radiographer to give immediate assistance if
required; and

c. the radiographer's direct observation of the assistant's performance of the operations referred to in this Section.

* * *

[See Prior Text in E-F]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), amended LR 23:1139 (September 1997).

APPENDIX B

RADIOGRAPHER CERTIFICATION

I. REQUIREMENTS FOR CERTIFICATION PROGRAMS

A. All certification programs must:

1. Require applicants for certification to:

(a) receive training in the topics set forth in Appendix A of this Chapter or equivalent Nuclear Regulatory Commission regulations, and

(b) satisfactorily complete a written examination covering these topics;

2. Require applicants for certification to provide documentation that demonstrates that the applicant has:

(a) received training in the topics set forth in Appendix A of this Chapter or equivalent Nuclear Regulatory Commission regulations;

(b) satisfactorily completed a minimum period of on-the-job training as specified in Section 575 of this Chapter; and

(c) received verification by a state licensee or registrant or a Nuclear Regulatory Commission licensee that the applicant has demonstrated the capability of independently working as a radiographer;

3. Include procedures to ensure that all examination questions are protected from disclosure;

4. Include procedures for denying an application and revoking, suspending, and reinstating a certification;

5. Provide a certification period of not less than 3 years nor more than 5 years;

6. Include procedures for renewing certifications and, if the procedures allow renewal without examination, require evidence of full-time employment and annual refresher training; and

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

II. REQUIREMENTS FOR WRITTEN EXAMINATIONS

A. All examinations must:

1. Be designed to test an individual's knowledge and understanding of the topics listed in Appendix A of this Chapter or equivalent Nuclear Regulatory Commission requirements;

2. Be written in a multiple-choice format; and

3. Have test items drawn from a question bank containing psychometrically valid questions based on the material in Appendix A of this Chapter.

**Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection**

Chapter 6. X-rays in the Healing Arts

§606. Radiographic Systems Other Than Fluoroscopic, Dental Intraoral, or Computed Tomography X-ray Systems

* * *

[See Prior Text in A-B.6.b]

i. used continuously for more than one week in the same location, e.g., a room or suite, shall meet the requirements of LAC 33:XV.606.B.2-b-i6.a; and

* * *

[See Prior Text in B.6.b.ii]

7. Operator Protection for Veterinary Systems and Panoramic Dental Systems. All stationary, mobile, or portable X-ray systems used for veterinary work or panoramic dental systems shall be provided with either a 6.5 foot (2 meters) high protective barrier for operator protection during exposures, or shall be provided with means to allow the operator to be least 12 feet (3.7 meters) from the tube housing assembly during exposures.

* * *

[See Prior Text in C-I]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 19:1421 (November 1993), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

**Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection**

Chapter 7. Use of Radionuclides in the Healing Arts

§719. Requirements for Possession of Sealed Sources and Brachytherapy Sources

* * *

[See Prior Text in A-E.1]

2. file a written report with the division within five days of receiving the leak test results ~~with the division~~ describing the equipment involved, the test results, and the action taken.

* * *

[See Prior Text in F-I]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), repealed and repromulgated by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§728. Decay-in-Storage

A. A licensee shall hold radioactive material for decay-in-storage before disposal in ordinary trash and is exempt from the requirements of LAC 33:XV.431460 of these regulations if the licensee:

* * *

[See Prior Text in A.1-B]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), repealed and repromulgated by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

§731. Use of Radiopharmaceuticals, Generators, and Reagent Kits For Imaging and Localization Studies

* * *

[See Prior Text in A-F.2]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Repealed and repromulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended LR 24:2104 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR

**Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection**

Chapter 13. Licensing Requirements for Land Disposal of Radioactive Waste

Subchapter E. Records, Reports, Tests and Inspections

§1333. Maintenance of Records, Reports and Transfers

* * *

[See Prior Text in A-C]

D. Notwithstanding Subsections A-C of this Section, copies of records of the location and the quantity of radioactive wastes contained in the disposal site shall be transferred upon license termination to the chief executive of the nearest municipality, the chief executive of the ~~county~~parish in which the facility is located, the ~~county~~parish zoning board or land development and planning agency, the state governor, and other state, local, and federal governmental agencies as designated by the division at the time of license termination.

* * *

[See Prior Text in E-J.2]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 24:2111 (November 1998), amended by the Office of Environmental Assessment, Environmental Quality Division, LR

Title 33
ENVIRONMENTAL QUALITY
Part XV. Radiation Protection

§1502. Scope

* * *

[See Prior Text in A-C.4]

D. If U.S. DOT regulations are not applicable to a shipment of licensed material, the licensee shall conform to the standards and requirements of the U.S. DOT specified in Subsection A of this Section to the same extent as if the shipment or transportation were subject to U.S. DOT regulations. A request for modification, waiver, or exemption from those requirements, and any notification referred to in those requirements, must be filed with, or made to, the ~~Director, Office of Nuclear Material Safety and Safeguards, U.S. NRC, Washington, DC 20555-0001~~U.S. DOT.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

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