

# Title 33

## ENVIRONMENTAL QUALITY

### Part XV. Radiation Protection

#### Chapter 1. General Provisions

##### §101. Scope

A. Except as otherwise specifically provided, these regulations apply to all persons who receive, possess, use, transfer, own, or acquire any source of radiation provided, however, that nothing in these regulations shall apply to any person to the extent such person is subject to regulation by the U.S. Nuclear Regulatory Commission.

B. Attention is directed to the fact that state regulation of source material, byproduct 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 Parts 40 and 150 of the U.S. Nuclear Regulatory Commission's regulations (10 CFR Parts 40 and 150).

**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 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 27:1225 (August 2001).

##### §102. Definitions and Abbreviations

As used in these regulations, these terms have the definitions set forth below. Additional definitions used only in a certain chapter may be found in that Chapter.

*A<sub>1</sub>*—the maximum activity of special form radioactive material permitted in a Type A package.

*A<sub>2</sub>*—the maximum activity of radioactive material, other than special form, LSA, and SCO material, permitted in a Type A package. These values are either listed in, or may be derived in accordance with the procedure prescribed in, Appendix A of 10 CFR Part 71.

*Absorbed Dose*—the energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

*Accelerator-Produced Material*—Repealed (February 2014).

*Accelerator-Produced Radioactive Material*—any material made radioactive by a particle accelerator.

*Act*—the Louisiana Environmental Quality Act, (R.S. 30:2001 et seq).

*Activity*—the rate of disintegration or transformation or decay of radioactive material. The units of activity are the becquerel (Bq) and the curie (Ci).

*Address of Use*—the building or buildings that are identified on the license and where radioactive material may be received, prepared, used, or stored.

*Administrative Authority*—the Secretary of the Department of Environmental Quality or his designee or the appropriate assistant secretary or his designee.

*Adult*—an individual 18 or more years of age.

*Agreement State*—any state with which the U.S. Nuclear Regulatory Commission or the U.S. Atomic Energy Commission has entered into an effective agreement under Subsection 274.b of the Atomic Energy Act of 1954, as amended (73 Stat. 689).

*Airborne Radioactive Material*—any radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.

*Airborne Radioactivity Area*—a room, enclosure, or area in which airborne radioactive materials exist in concentrations:

1. in excess of the derived air concentrations (DACs) specified in LAC 33:XV.499.Appendix B, Table I of these regulations; or

2. to such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC-hours.

*Alert*—events that 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 off-site response organizations to protect persons off-site.

*Area of Use*—a portion of a physical structure that has been set aside for the purpose of receiving, using, or storing radioactive material.

*As Low As Is Reasonably Achievable (ALARA)*—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 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 utilization of nuclear energy and licensed or registered sources of radiation in the public interest.

**Authorized Medical Physicist**—an individual who meets the requirements in LAC 33:XV.763.J.1 and M, or who is identified as an authorized medical physicist or teletherapy physicist on:

1. a specific medical use license issued by the department, the U.S. Nuclear Regulatory Commission, or an agreement state;
2. a medical use permit issued by a U.S. Nuclear Regulatory Commission master material licensee;
3. a permit issued by the department, the U.S. Nuclear Regulatory Commission, or an agreement state broad scope medical use licensee; or
4. a permit issued by a U.S. Nuclear Regulatory Commission master material license broad scope medical use permittee.

**Authorized Nuclear Pharmacist**—a pharmacist who:

1. is board certified as a nuclear pharmacist by the Board of Pharmaceutical Specialties; or
2. is identified as an authorized nuclear pharmacist on a department, licensing state, Nuclear Regulatory Commission, or agreement state license that authorizes the use of radioactive material in the practice of nuclear pharmacy; or
3. is identified as an authorized nuclear pharmacist on a permit issued by the department, licensing state, Nuclear Regulatory Commission, or agreement state specific licensee of broad scope authorized to permit the use of radioactive material in the practice of nuclear pharmacy; or
4. meets the requirements specified in LAC 33:XV.763.K and M.

**Authorized User**—a physician, dentist, or podiatrist who is:

1. board certified by at least one of the boards listed in LAC 33:XV.763.C.1, D.1, E.1, F.1, H.1, or I.1;
2. identified as an authorized user on a department, licensing state, Nuclear Regulatory Commission, or agreement state license that authorizes the medical use of radioactive material; or
3. identified as an authorized user on a permit issued by the department, licensing state, Nuclear Regulatory Commission, or agreement state specific licensee of broad scope authorized to permit the medical use of radioactive material.

**Background Radiation**—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 radiation from source, byproduct, or special nuclear materials regulated by the department.

**Becquerel**—the SI unit of measurement of radioactivity; it is equal to one transformation per second. One curie is equal to  $3.7 \times 10^{10}$  becquerels.

**Bioassay**—the determination of kinds, quantities or concentrations and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body. For purposes of these regulations, *radiobioassay* is an equivalent term.

**Brachytherapy**—a method of radiation therapy in which sealed sources are utilized to deliver a radiation dose at a distance of up to a few centimeters, by surface, intracavitary, or interstitial application.

**Brachytherapy Source**—a radioactive source or a manufacturer-assembled source train or a combination of these sources that is designed to deliver a therapeutic dose within a distance of a few centimeters.

**Byproduct Material**—

1. any radioactive material, except special nuclear material, yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material;

2. the tailings or wastes produced by the extraction or concentration of uranium or thorium (R.S. 30:2103) from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium or thorium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute byproduct material within this definition;

3. any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

4. any material that has been made radioactive by use of a particle accelerator, and is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

5. any discrete source of naturally occurring radioactive material, other than source material that the commission, in consultation with the administrator of the Environmental Protection Agency, the secretary of Energy, the secretary of Homeland Security, and the head of any other appropriate federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and before, on, or after August 8, 2005, is extracted or converted after extraction for the use in a commercial, medical, or research activity.

**Calendar Quarter**—any period consisting of not less than 12 consecutive weeks nor more than 14 consecutive weeks. The first calendar quarter of each year shall begin in January, and subsequent calendar quarters shall be so arranged that no day is included in more than one calendar quarter, and no

**Ionizing Radiation**—any electromagnetic or particulate radiation capable of producing ions, directly or indirectly, in its passage through matter. It includes any or all of the following: alpha rays, beta rays, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles, but not sound or radio waves, or visible, infrared, or ultraviolet light.

**Lens Dose Equivalent (LDE)**—the external exposure of the lens of the eye, which is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm<sup>2</sup>).

**Licensed (or Registered) Material**—radioactive material received, possessed, used, transferred, or disposed of under a general or specific license (or registration) issued by the department.

**Licensee**—any person who is licensed by the department in accordance with the act and regulations promulgated by the administrative authority (R.S. 30:2105).

**Licenses**—general licenses and specific licenses.

1. **General License**—a license effective pursuant to regulations promulgated by the administrative authority without the filing of an application to transfer, acquire, own, possess, or use quantities of, or devices or equipment utilizing byproduct, source or special nuclear materials, technologically enhanced natural radioactive material, or other radioactive material occurring naturally or produced artificially.

2. **Specific License**—a license issued after application to the department to use, manufacture, produce, transfer, receive, acquire, own, or possess quantities of, or devices or equipment utilizing byproduct, source, or special nuclear materials, technologically enhanced natural radioactive material, or other radioactive material occurring naturally or produced artificially (R.S. 30:2105).

**Licensing State**—any state with regulations equivalent to or more stringent than "Suggested State Regulations for Control of Radiation" relating to, and an effective program for, the regulatory control of naturally occurring or accelerator-produced radioactive material (NARM).

**Limits (Dose Limits)**—the permissible upper bounds of radiation doses.

**Lost or Missing Licensed (or Registered) Source of Radiation**—licensed (or registered) source of radiation whose location is unknown. This definition includes but is not limited to, radioactive material that has been shipped but has not reached its planned destination and whose location cannot be readily traced in the transportation system.

**Low Dose-Rate Remote Afterloader**—a brachytherapy device that remotely delivers a dose rate of less than or equal to 2 gray (200 rads) per hour at the point or surface where the dose is prescribed.

**Major Processor**—a user processing, handling, or manufacturing radioactive material exceeding Type A quantities as unsealed sources of material, or exceeding four times Type B quantities as sealed sources, but not including

nuclear medicine programs, universities, industrial radiographers, or small industrial programs. Type A and B quantities are defined in 10 CFR 71.4.

**Management**—the chief executive officer or that individual's designee.

**Manual Brachytherapy**—a type of brachytherapy in which the brachytherapy sources (e.g., seeds, ribbons) are manually placed topically on or inserted either into the body cavities that are in close proximity to a treatment site or directly into the tissue volume.

**Medical Event**—an event that meets the criteria in LAC 33:XV.613.A, 712.A, or 915.A.

**Medical Institution**—an organization in which several medical disciplines are practiced and that has inpatient facilities.

**Medical Use**—the intentional internal or external administration of radioactive material, or the radiation therefrom, to patients or human research subjects under the supervision of an *authorized user* as defined in this Section.

**Medium Dose-Rate Remote Afterloader**—a brachytherapy device that remotely delivers a dose rate of greater than 2 gray (200 rads), but less than 12 gray (1200 rads), per hour at the point or surface where the dose is prescribed.

**Member of the Public**—any individual, except when that individual is receiving an occupational dose.

**Metric Prefixes and Abbreviations**—

c	centi	(=10 <sup>-2</sup> )	f	femto	(=10 <sup>-15</sup> )
m	milli	(=10 <sup>-3</sup> )	k	kilo	(=10 <sup>3</sup> )
μ	micro	(=10 <sup>-6</sup> )	M	mega	(=10 <sup>6</sup> )
n	nano	(=10 <sup>-9</sup> )	G	giga	(=10 <sup>9</sup> )
p	pico	(=10 <sup>-12</sup> )	T	tera	(=10 <sup>12</sup> )

**Minor**—an individual less than 18 years of age.

**Mobile Medical Service**—the transportation of radioactive material to, and its medical use at, the client's address.

**Mobile Nuclear Medicine Service**—the transportation and medical use of radioactive material.

**Monitoring**—the measurement of radiation, radioactive material concentrations, surface area activities, or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses. For purposes of these regulations, *radiation monitoring* and *radiation protection monitoring* are equivalent terms.

**Nationally Tracked Source**—a sealed source containing a quantity equal to or greater than the Category 1 or Category 2 levels of any radioactive material listed in LAC 33:XV.399.Appendix G. In this context a *sealed source* is defined as radioactive material that is sealed in a capsule

or closely bonded, in a solid form, and that is not exempt from regulatory control. It does not mean material encapsulated solely for disposal, or nuclear material contained in any fuel assembly, subassembly, fuel rod, or fuel pellet. Category 1 *nationally tracked sources* are those containing radioactive material at a quantity equal to or greater than the Category 1 threshold. Category 2 *nationally tracked sources* are those containing radioactive material at a quantity equal to or greater than the Category 2 threshold but less than the Category 1 threshold.

**Natural Radioactivity**—radioactivity from naturally occurring radioactive materials (NORM).

**Naturally Occurring or Accelerator-Produced Radioactive Material (NARM)**—any nuclide that is radioactive in its natural physical state (i.e., not man-made) or that has been made radioactive by exposure to an accelerator beam. This material does not include source, byproduct, or special nuclear material.

**Nuclear Regulatory Commission (NRC)**—the U.S. Nuclear Regulatory Commission or its duly authorized representatives.

**Occupational Dose**—the dose received by an individual in the course of employment in which the individual's assigned duties for the licensee or registrant involve exposure to sources of radiation and/or 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 in accordance with LAC 33:XV.725, from voluntary participation in medical research programs, or as a member of the public.

**Ore Refineries**—all processors of ore containing natural radioactivity.

**Output**—the exposure rate, dose rate, or a quantity related in a known manner to these rates from a brachytherapy source or a teletherapy unit, a remote afterloader, or a gamma stereotactic radiosurgery unit for a specified set of exposure conditions.

**Package**—the packaging together with its radioactive contents as presented for transport.

**Particle Accelerator**—any machine capable of accelerating electrons, protons, deuterons or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 megaelectron volt.

**Patient Intervention**—actions by the patient or human research subject, whether intentional or unintentional, such as dislodging or removing treatment devices or prematurely terminating the administration.

**Person**—any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this state or any other state or political subdivision or agency thereof, and any legal

successor, representative, agent, or agency of the foregoing, other than the U.S. Nuclear Regulatory Commission or federal government agencies licensed by the U.S. Nuclear Regulatory Commission (R.S. 30:2105).

**Personnel-Monitoring Equipment**—devices such as film badges, pocket dosimeters, or thermoluminescent dosimeters designed to be worn or carried by an individual for the purpose of estimating the dose received by the individual.

**Pharmacist**—any individual licensed by a state or territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to practice pharmacy.

**Physician**—a medical doctor or doctor of osteopathy licensed by a state or territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to prescribe drugs in the practice of medicine, or who is authorized to practice medicine under the provisions of R.S. 37:1261 et seq.

**Podiatrist**—an individual licensed by a state or territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to practice podiatry.

**Positron Emission Tomography (PET) Radionuclide Production Facility**—a facility operating a cyclotron or accelerator for the purpose of producing PET radionuclides.

**Preceptor**—an individual who provides, directs, or verifies the training and experience required for an individual to become an authorized user, an authorized medical physicist, an authorized nuclear pharmacist, or a radiation safety officer.

**Prescribed Dosage**—the quantity of radiopharmaceutical activity as documented:

1. in a written directive; or
2. either in the diagnostic clinical procedures manual or in any appropriate record in accordance with the directions of the authorized user for diagnostic procedures.

**Prescribed Dose**—

1. for gamma stereotactic radiosurgery, the total dose as documented in the written directive;
2. for teletherapy, the total dose and dose per fraction as documented in the written directive; or
3. for manual brachytherapy, either the total source strength and exposure time or the total dose, as documented in the written directive; or
4. for remote brachytherapy afterloaders, the total dose and dose per fraction in the written directive.

**Principal Activities**—activities authorized by the license that are essential to achieving the purpose(s) for which the license was issued or amended. Storage during which no licensed material is accessed for use or disposal and activities incidental to decontamination or decommissioning are not principal activities.

**Protective Apron**—an apron made of radiation-attenuating materials used to reduce exposure to radiation.

2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2110 (October 2008).

### **§1518. Opening Instructions**

A. Before delivery of a package to a carrier for transport, the licensee shall ensure that any special instructions needed to open the package safely have been sent to, or otherwise made available to, the consignee for the consignee's use in accordance with LAC 33:XV.455.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2104(B) and 2113.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of the Secretary, Legal Affairs Division, LR 34:2111 (October 2008).

### **§1519. Advance Notification of Shipment of Irradiated Reactor Fuel and Nuclear Waste**

[Formerly §1516]

A. As specified in Subsections B, C, and D of this Section, each licensee shall provide advance notification to the governor, or to the governor's designee, of the shipment of licensed material, within or across the boundary of Louisiana, before the transport, or delivery to a carrier for transport, of licensed material outside the confines of the licensee's plant or other place of use or storage. A list of the names and mailing addresses of the governors' designees receiving advance notification of transportation of nuclear waste was published in the *Federal Register* on June 30, 1995 (60 FR 34306). The list of governor's designees and tribal official's designees of participating tribes will be published annually in the *Federal Register* on or about June 30 to reflect any changes in the information. The list of the names and mailing addresses of the governors' designees and tribal official's designees of participating tribes is also available on request from the Director, Division of Intergovernmental Liaison and Rulemaking, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. In Louisiana, the governor's designee is the Louisiana State Police, 7919 Independence Boulevard, Box 66614 (#A2621), Baton Rouge, LA 70896-6614.

1. As specified in Subsections B, C, and D of this Section, after June 11, 2013, each licensee shall provide advance notification to the *tribal official* as defined in LAC 33:XV.102 of participating tribes referenced in Subsection A of this Section, or the official's designee, of the shipment of licensed material, within or across the boundary of the tribe's reservation, before the transport, or delivery to a carrier for transport, of licensed material outside the confines of the licensee's plant, or other place of use or storage.

B. Advance notification is required for shipments of irradiated reactor fuel in quantities less than that subject to advance notification requirements of 10 CFR 73.37(f). Advance notification is also required for shipments of licensed material, other than irradiated fuel, meeting the following three conditions:

1. the licensed material is required to be in Type B packaging for transportation;

2. the licensed material is being transported to or across the boundary of the state en route to a disposal facility or to a collection point for transport to a disposal facility; and

3. the quantity of licensed material in a single package exceeds the least of the following:

a. for special form radioactive material, 3000 times the  $A_1$  value of the radionuclides as specified in Table A-1 of 10 CFR Part 71, Appendix A, incorporated by reference in LAC 33:XV.1599.A;

b. for normal form radioactive material, 3000 times the  $A_2$  value of the radionuclides as specified in Table A-1 of 10 CFR Part 71, Appendix A, incorporated by reference in LAC 33:XV.1599.A; or

c. 1000 TBq (27,000 Ci).

C. The following procedures shall be used to submit advance notification.

1. The notification shall be made in writing to the office of each appropriate governor or to the governor's designee, the office of each appropriate tribal official or tribal official's designee, and to the department.

2. A notification delivered by mail must be postmarked at least seven days before the beginning of the seven-day period during which departure of the shipment is estimated to occur.

3. A notification delivered by any means other than mail shall reach the office of the governor or the governor's designee or the tribal official or tribal official's designee at least four days before the beginning of the seven-day period during which departure of the shipment is estimated to occur.

4. The licensee shall retain a copy of the notification as a record for three years.

D. Each advance notification of shipment of irradiated reactor fuel or nuclear waste shall contain the following information:

1. the name, address, and telephone number of the shipper, carrier, and receiver of the irradiated reactor fuel or nuclear waste shipment;

2. a description of the irradiated reactor fuel or nuclear waste contained in the shipment, as specified in the regulations of U.S. DOT in 49 CFR 172.202 and 172.203(d);

3. the point of origin of the shipment, and the seven-day period during which departure of the shipment is estimated to occur;

4. the seven-day period during which arrival of the shipment at the boundary of the state or tribal reservation is estimated to occur;